VOL. XXXIV. No 11 NOVEMBER 1949

MECCANO MAGAZINE

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6D.

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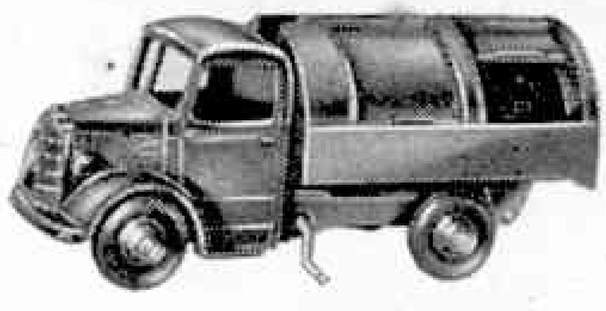

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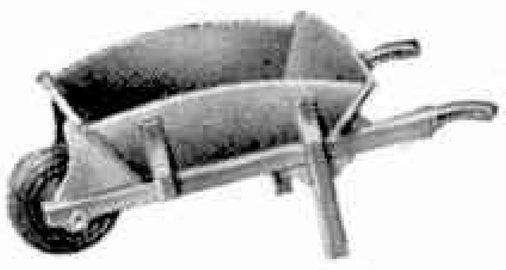

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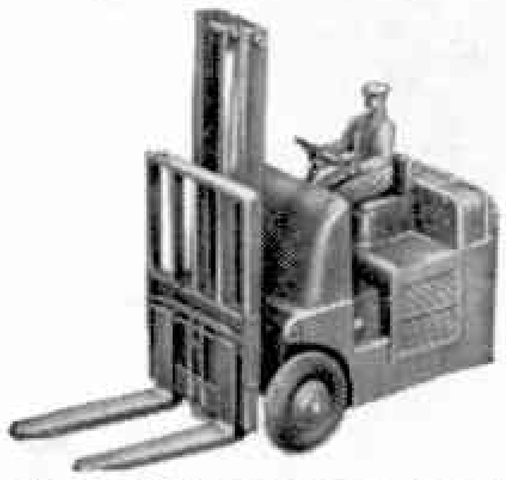

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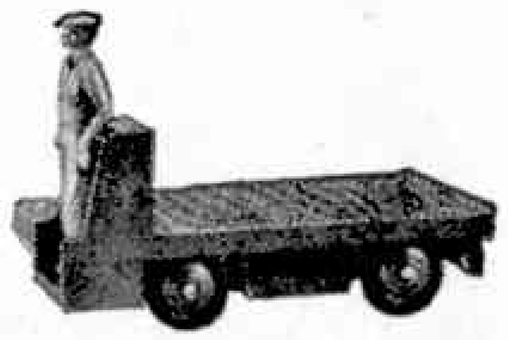

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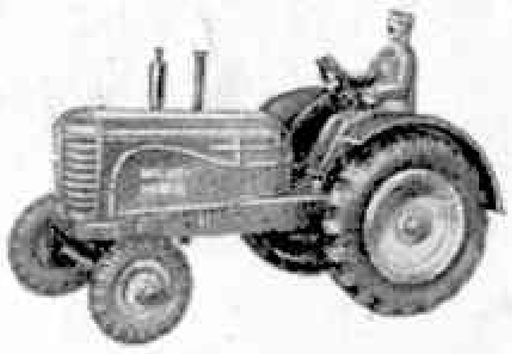

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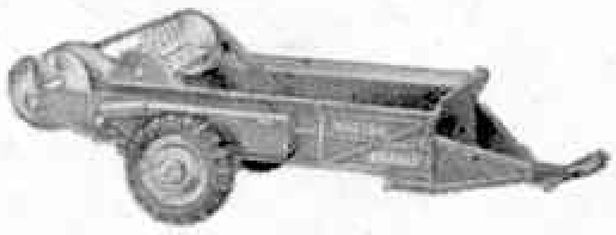

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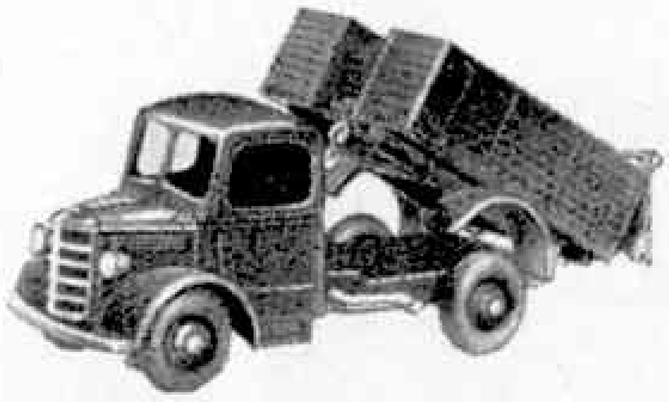

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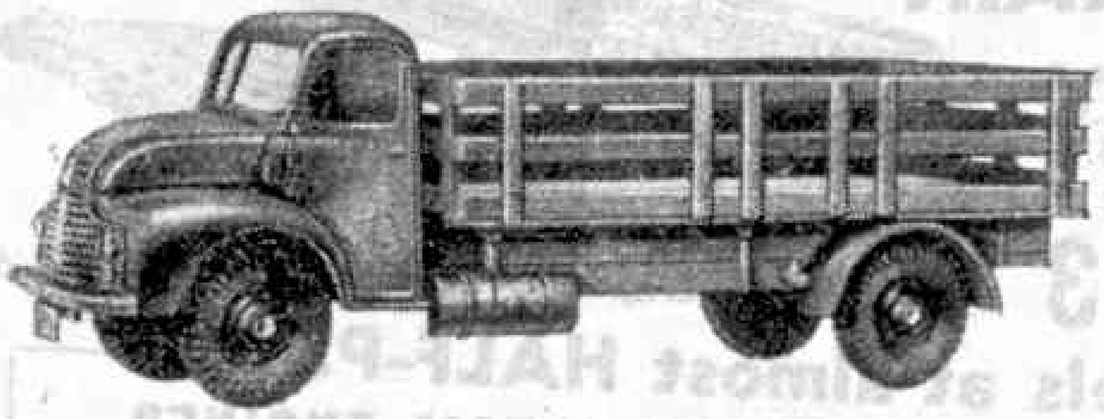

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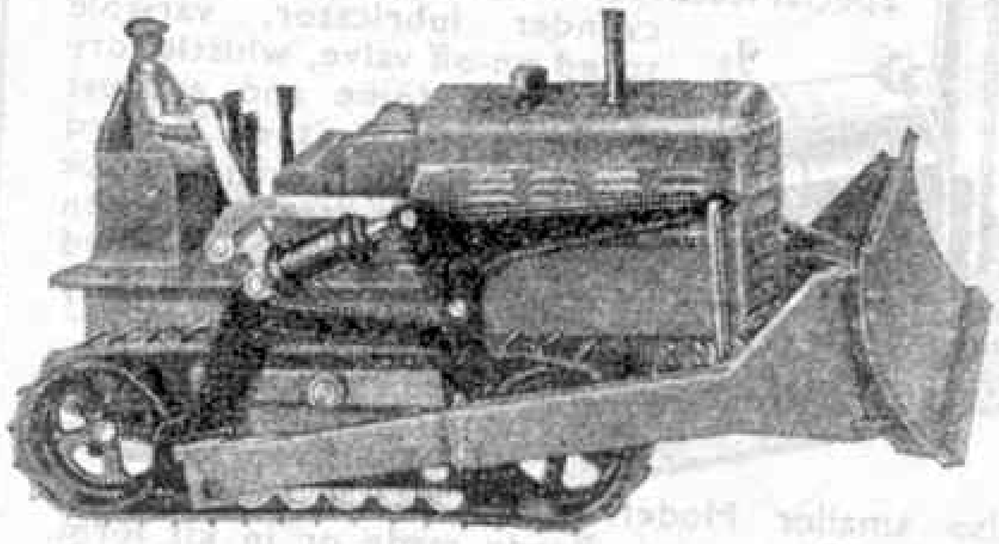

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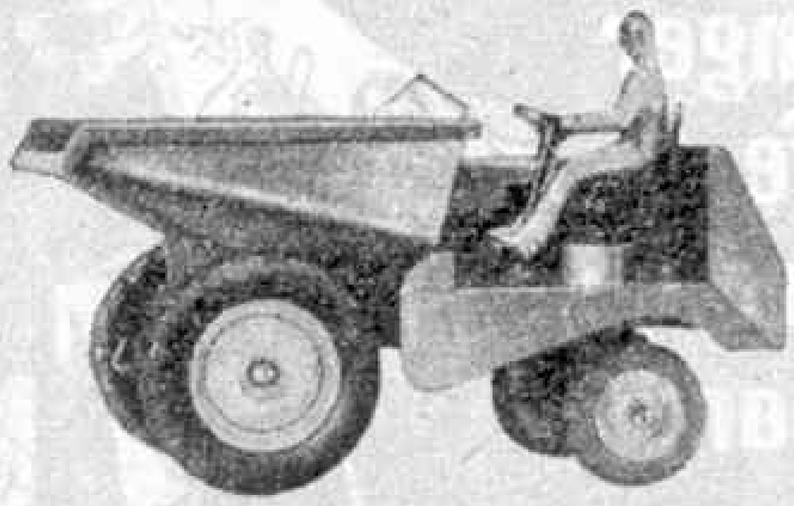

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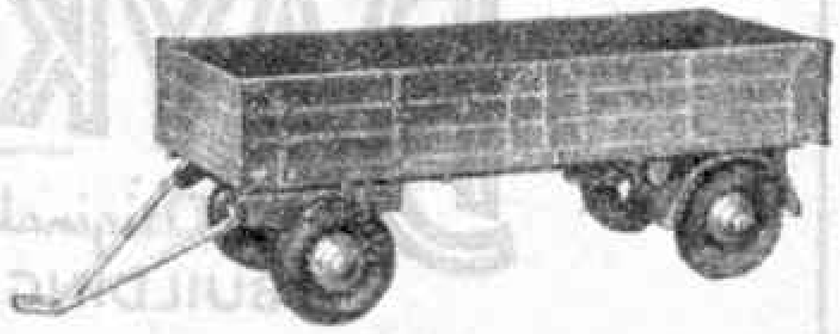

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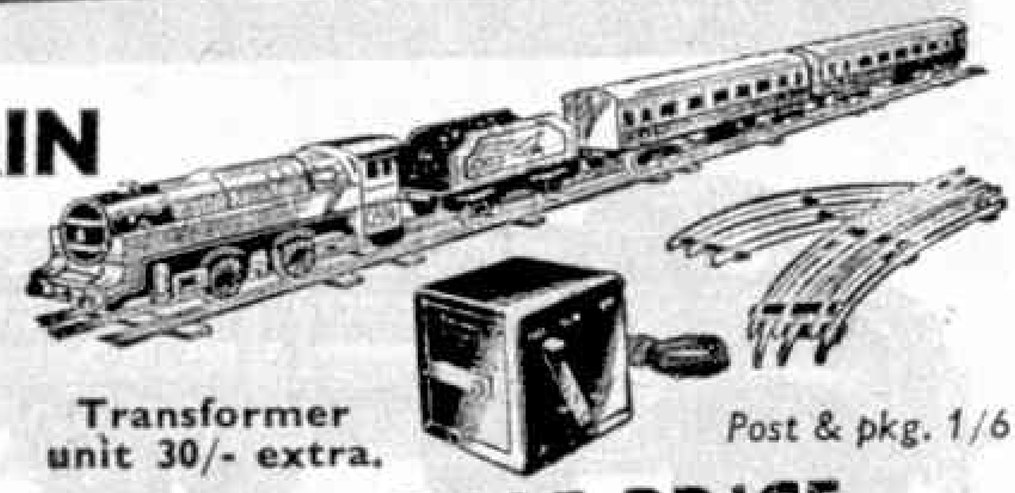

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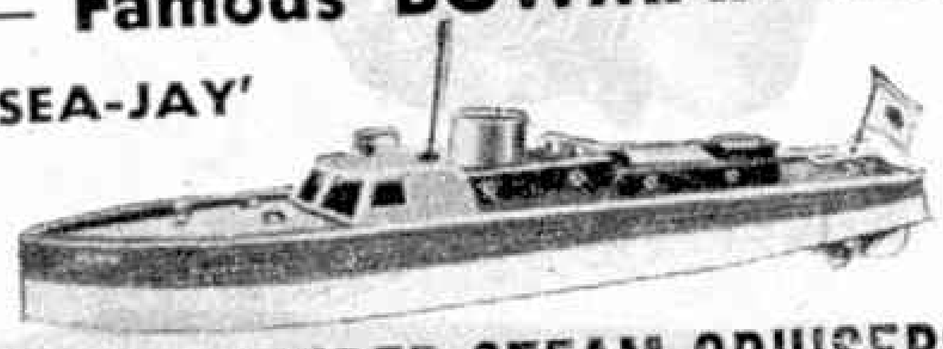

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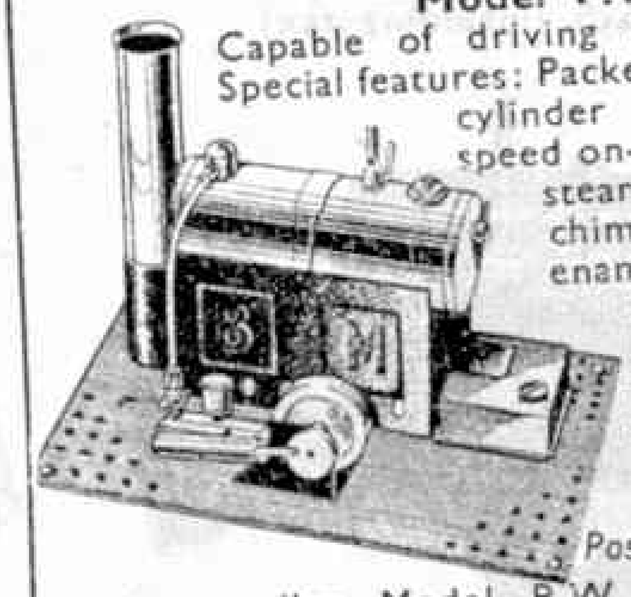

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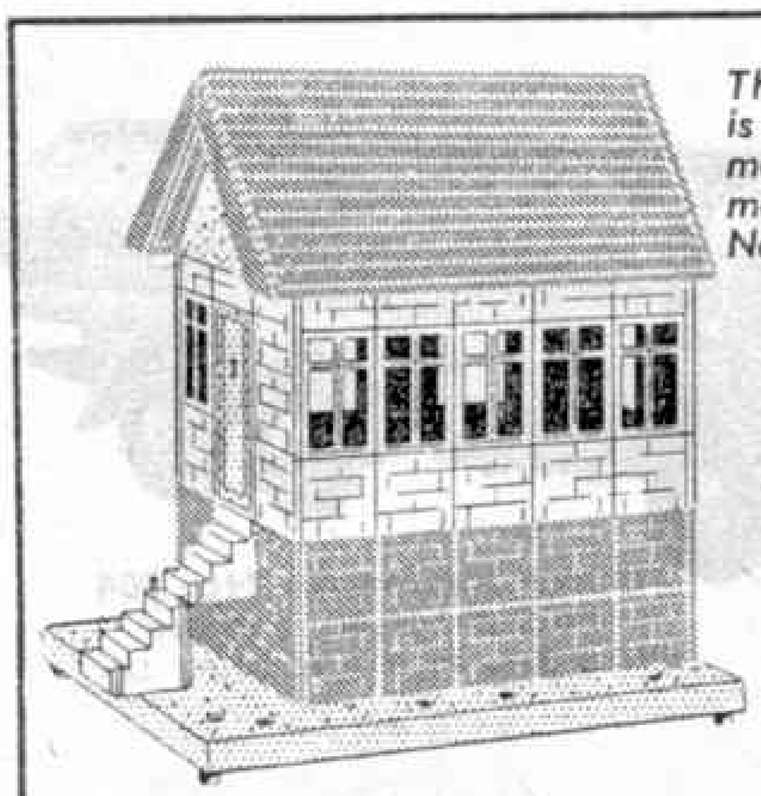

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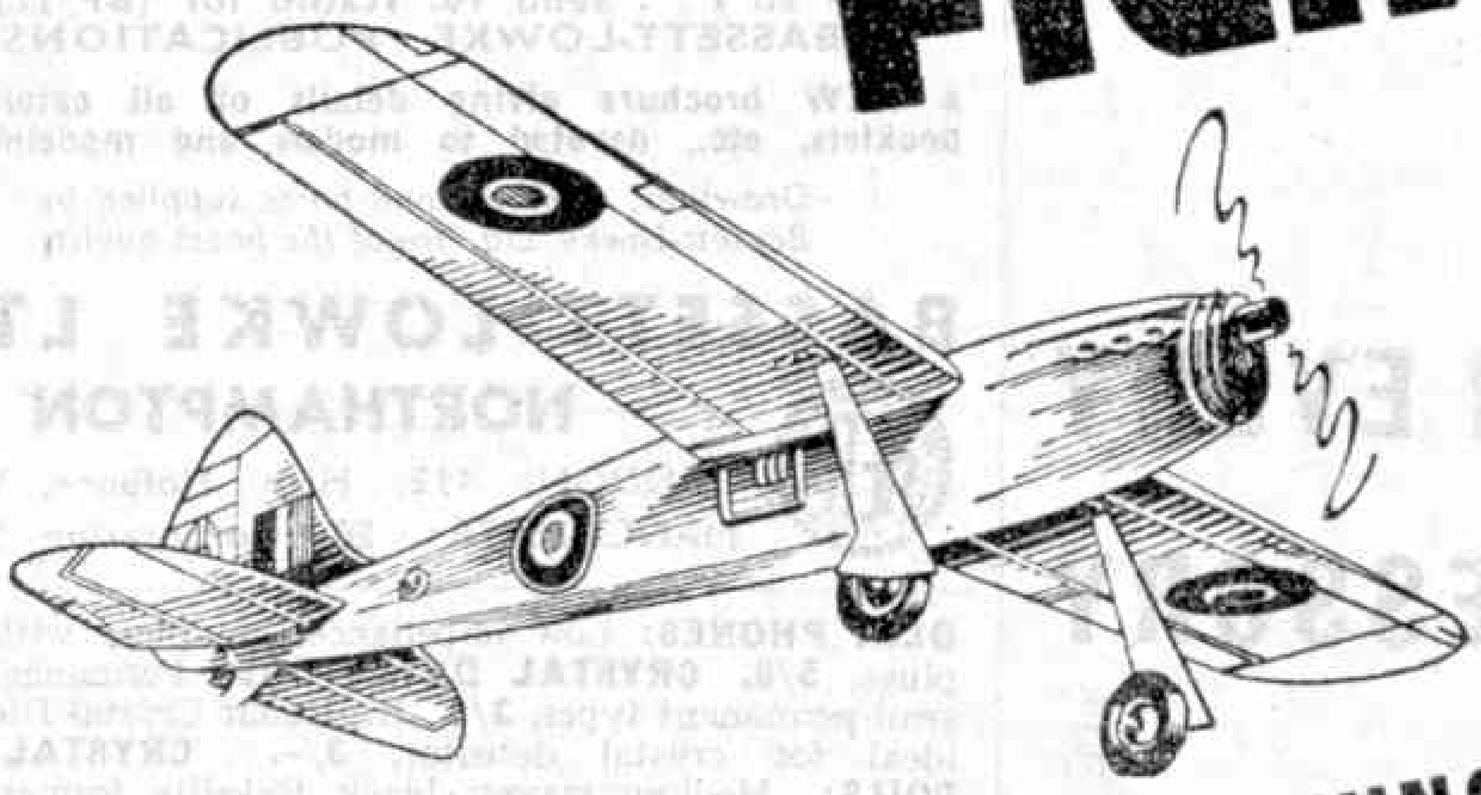

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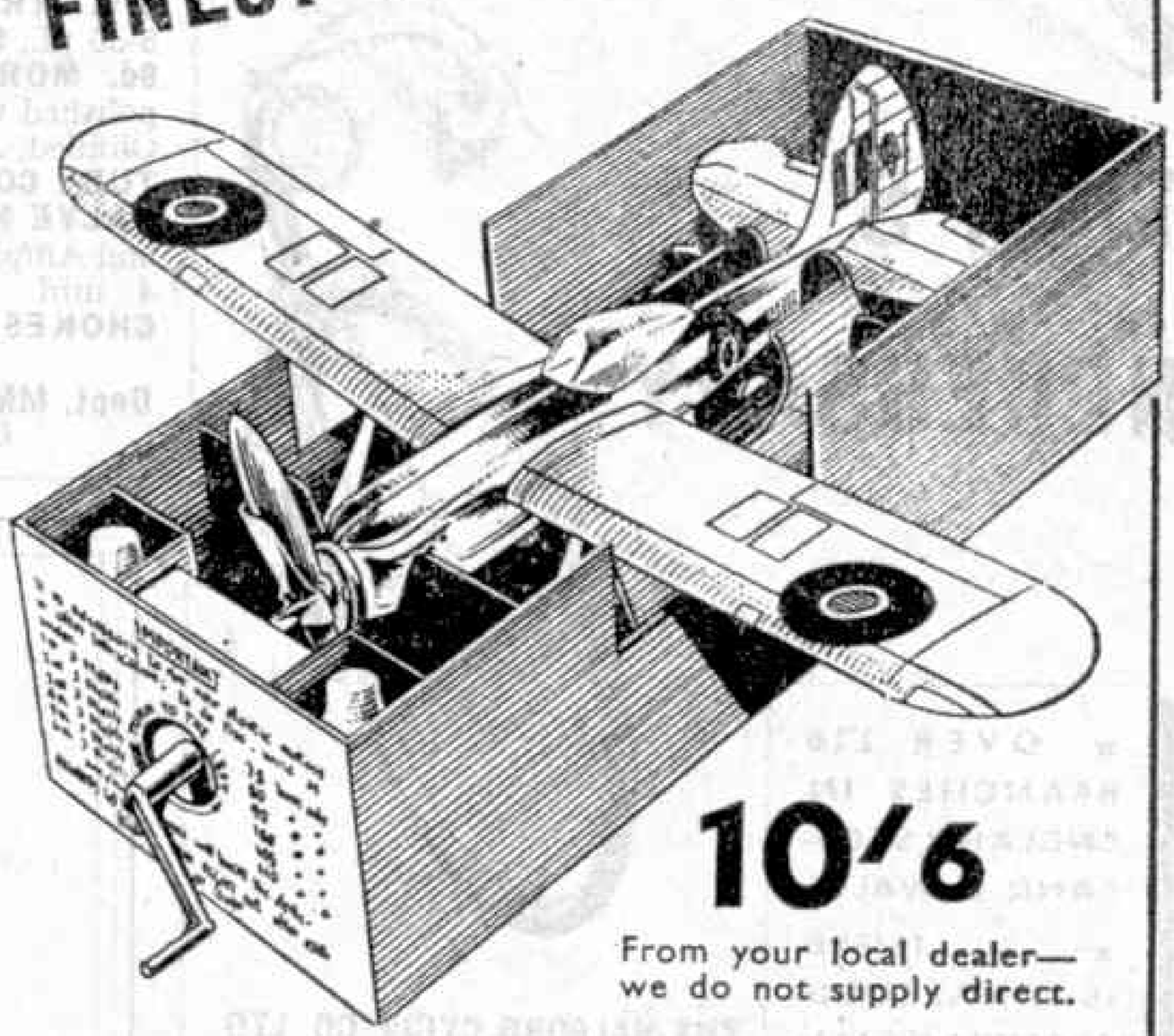

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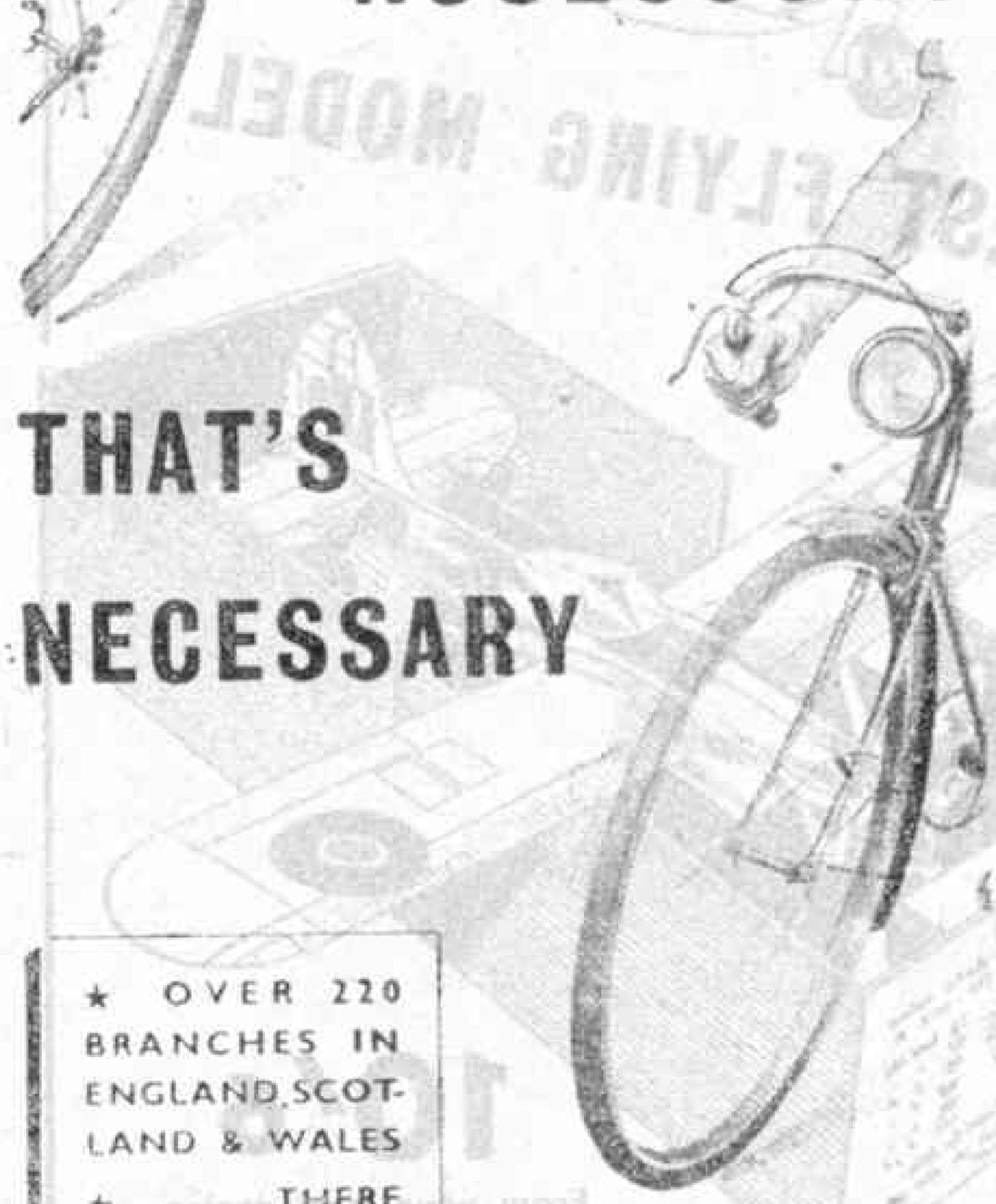

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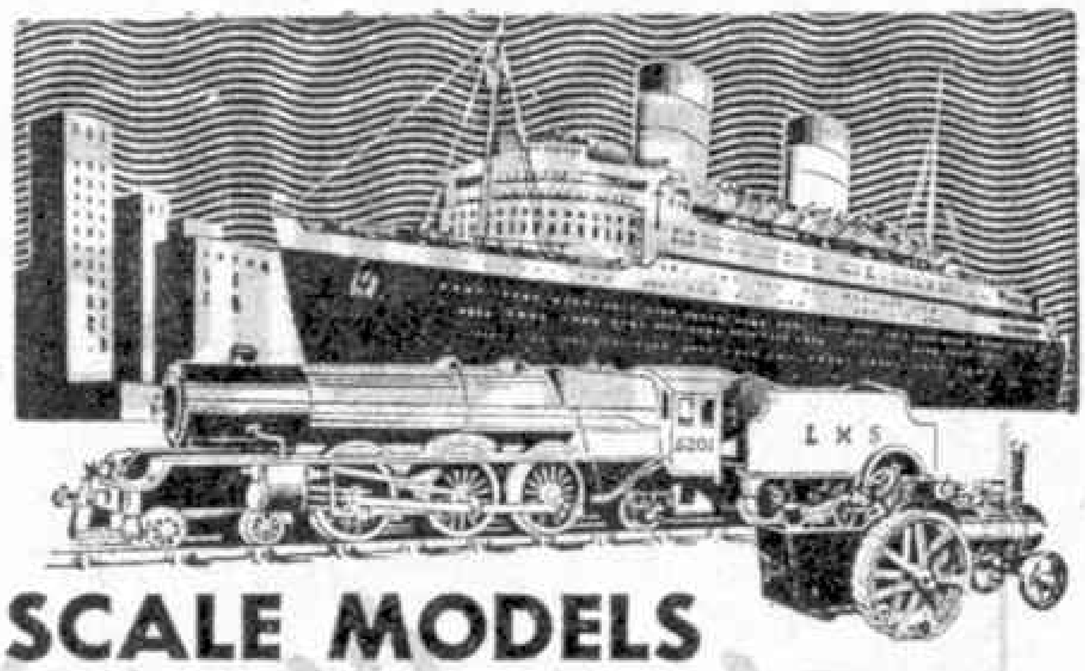

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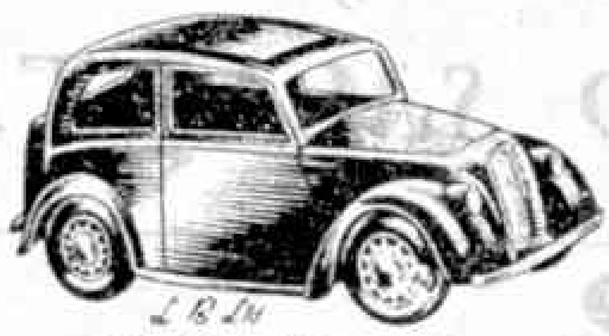

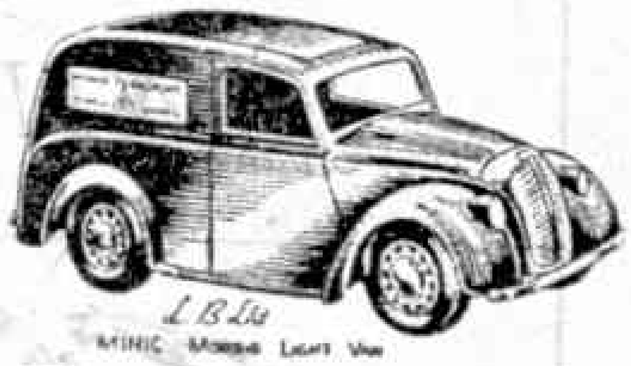

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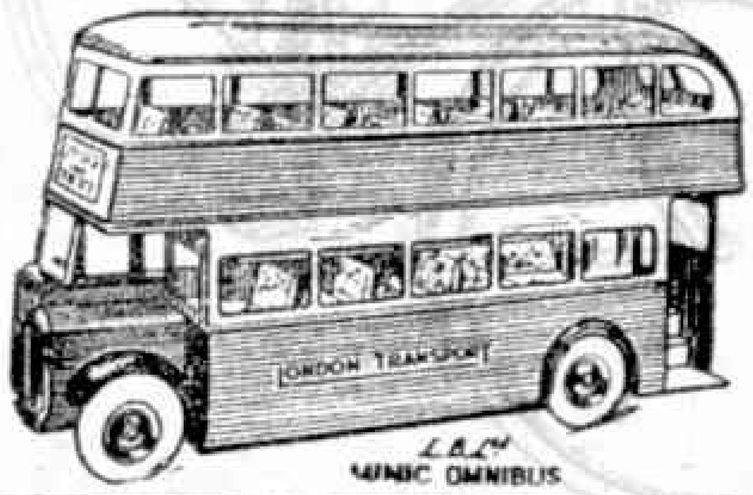

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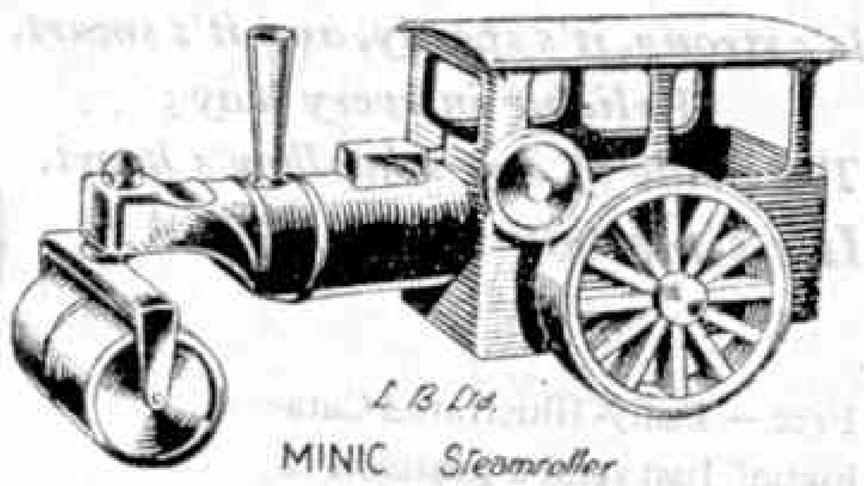

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MECCANO MAGAZINE

Editorial Office:
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Vol. XXXIV
No. 11
November 1949

With the Editor

Guided Missiles

Few of us took any interest in guided missiles until 1944, when the Germans launched their V.1 flying bomb and V.2 rocket attacks on London. A year later the Americans dropped the first atomic bombs on Japan, and "experts" at once began to tell us that it was merely a matter of time before super-V.2 rockets with atomic warheads would replace bombers in the world's air forces, and that conventional fighter aircraft would give way to guided interceptor rockets. The term "push-button warfare" was coined, and we all began to wonder uneasily what the future might hold in store for us.

That was four years ago, and yet the air forces of to-day look very like those of 1945. In fact, the "Superfortress" and "Meteor," early versions of which were used in the war, are still the spearheads of Western Nations' attack and defence. Some progress with push-button warfare has been made, as John W. R. Taylor explains in his article on page 424; but on the whole it remains a dream, or rather, nightmare of the future.

Meanwhile, we should remember that rockets are not merely vehicles of death and destruction. Like most of man's inventions, they have powers for good or evil, according to the way they are used. Even now they are bringing back invaluable scientific data from heights up to 140 miles, and scientists claim that special rockets may one day enable us to control the weather. Furthermore, level-headed people like Lord Brabazon believe that the day is not far distant when we shall be able to fly by rocket to the Moon.

There is in fact little doubt that, for better or for worse, rockets and guided missiles are going to play a big part in our lives in future.

British Railways Prize Scheme for Best-Kept Lengths of Track

The Railway Executive have introduced a system of awards for the best maintained lengths of permanent way. Prizes are to be given annually to the gang in each district whose length is adjudged, by a uniform system of marking, to be the best maintained length in the whole district. Further prizes will be awarded to gangs who have achieved the most satisfactory results when factors over which they have no control are taken into consideration as well as the marking.

The permanent way inspector of each district getting the highest average marking per length is to be awarded a cup to be held for twelve months, also a miniature cup for his retention.

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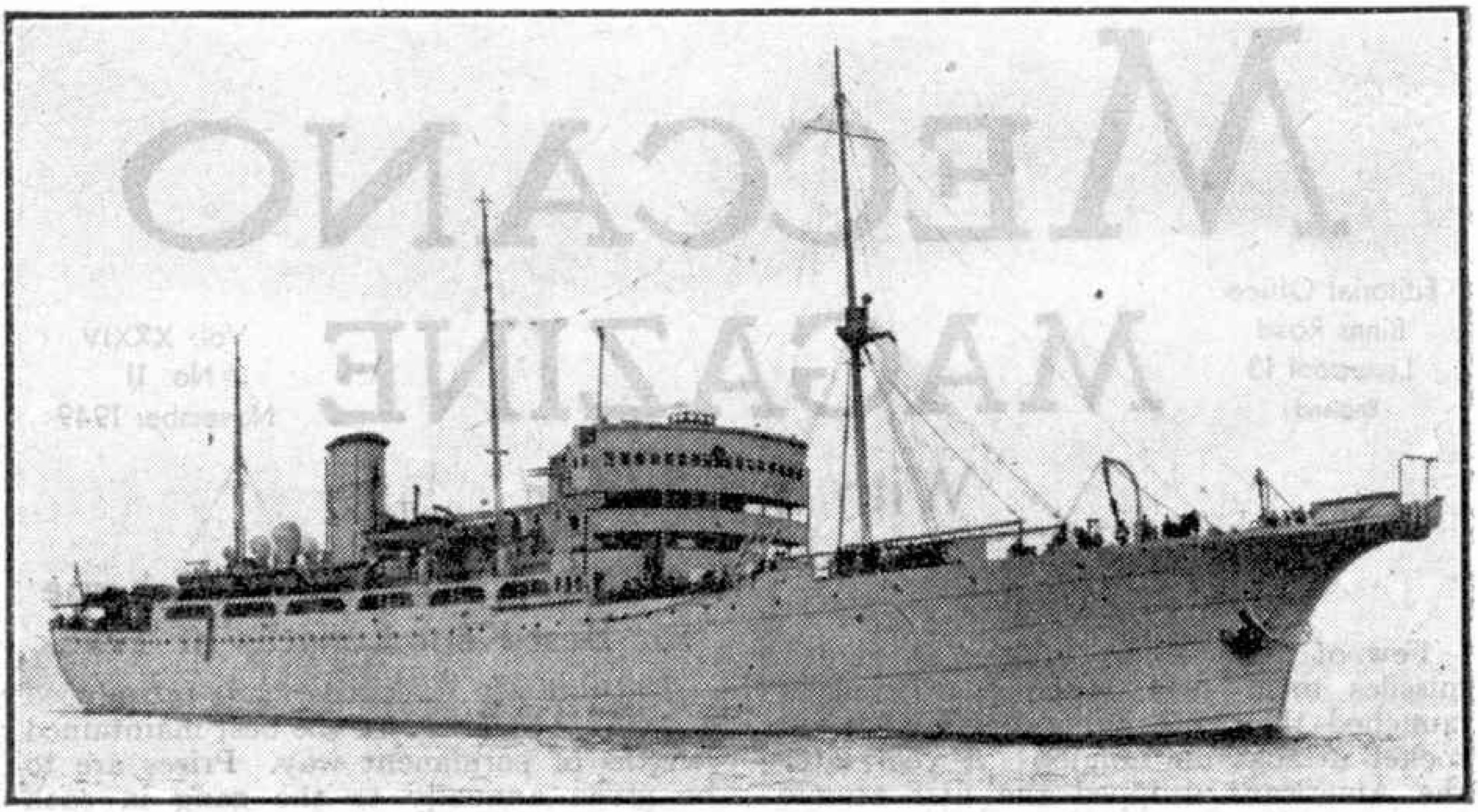


The Post Office "Navy"

By W. H. Owens

EVEN in this age of radio-telegraphy the life and progress of the civilized world still depends to a very important degree upon the submarine cable system. Nearly 360,000 miles of sea cables encircle the globe to-day, and in some parts of the oceans they lie at a depth of three to four miles. The big commercial cable companies and various Government administrations own fleets of cable repair ships which are voyaging the seas all the time, in fair weather or foul, to maintain these essential communications.

From the coasts of Great Britain a cable network fans out to link this busy island with the rest of the world. Apart from the Transatlantic cables there is, as it were, an inner web, which provides direct line communications with Continental Europe, the Channel Isles, Ireland, the Orkneys and Shetlands, and all the various smaller islands scattered around our shores. The maintenance of all these cables in home waters is the responsibility of the British Post Office which, during the last 80 years, has built up one of the biggest cable-laying and repairing organizations in the world.

Nowhere is there such an extensive or intricate system of submarine cables as that which burrows under the narrow seas that girdle Great Britain. While the cables are well protected in stout waterproof casing, damage may nevertheless be caused in stormy weather, or through the impact of drifting rocks, anchors or fishermen's trawling gear. Cables have sometimes been cut as a result of volcanic disturbances which occur from time to time on the sea bed.

Because a broken or damaged cable may cause serious hold-ups, if not chaos, on the busy trunk or Continental telephone services, cable ships must be ready and equipped to undertake emergency repairs by day or by night at the shortest notice. In the course of a year the Post Office ships steam several thousands of miles while engaged on cable-laying and repair operations off the British coastline. Sometimes they voyage much farther afield.

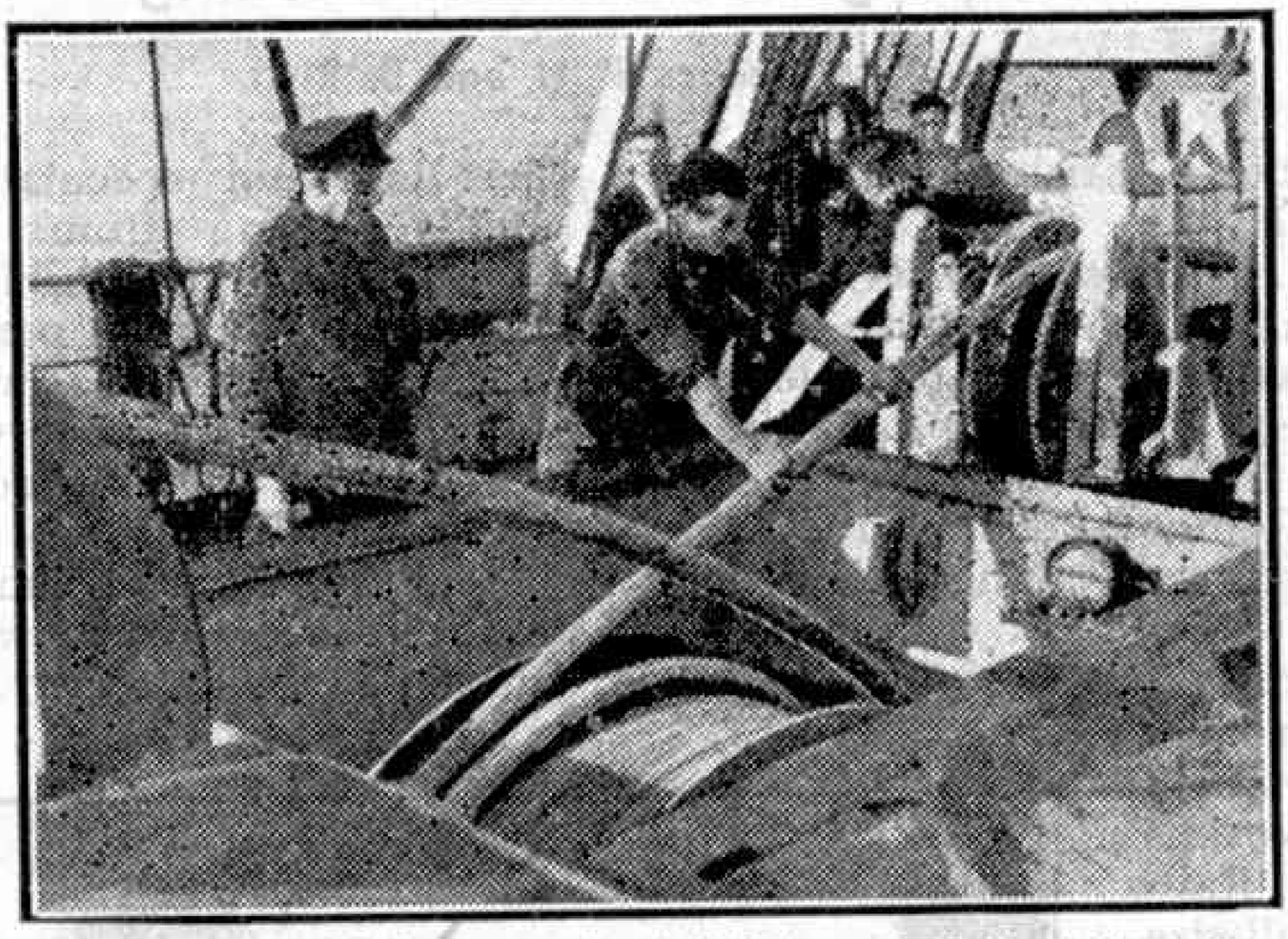
The Post Office deep sea cable-laying ship "Monarch," 8,050 tons, the largest and most up-to-date cable ship in the world. The illustrations to this article are reproduced by courtesy of the Postmaster General.

The Post Office cable fleet comprises four modern ships, officially styled His Majesty's Telegraph Ships, and each flies the Blue Ensign superimposed with this Government department's own crest. This crest, which was registered in 1883, represents Father Time seated on a coil of rope on the seashore, watching the shore end of the first submarine cable being landed.

Senior vessel of the fleet is H.M.T.S.

"*Monarch*," 8,050 tons, which is now the largest and most up-to-date cable ship in the world. She was put into commission only two or three years ago, and was designed specially for deep sea cable-laying, so that besides serving in home waters she is available for loan to the commercial companies when required for some specific ocean task.

The "*Monarch*" is oil-fired and carries about 2,600 nautical miles of deep sea cable in four huge cylindrical tanks below the decks. She is the first cable ship to be fitted with electrically-operated cable-winding gear, and this, together with every modern scientific device for cable inspection and repair work, makes for a high standard of efficiency in any conditions at sea. Actually this vessel was built originally for cable-laying operations between the Pacific Islands during the recent war, but victory over the Japanese was achieved before she was completed.



Paying out a cable between Great Britain and Holland from the "Alert," of the Post Office cable-laying fleet.

Three smaller Post Office cable ships, "*Iris*," "*Ariel*" and "*Alert*," are of about 1,500 tons gross, and each can carry some 600 tons of cable. These are particularly useful for cable work close inshore, though they are all capable of undertaking repairs in depths of 1,500 to 2,000 fathoms.

As soon as a cable fault is reported, its approximate position can be located by means of instruments in the Post Office huts which are sited round the coasts at every point where a cable comes ashore. The position is calculated on a chart, and then the bearings are wirelessed to the nearest repair ship, which steams at full speed towards the place.

The damaged cable may lie embedded in sand or be caught up in rocks, but the five-pronged grapnels carried by the ship will soon find it and haul it to the surface. A grapnel is dragged along the sea-bed and hooks its prey as the ship steams across it. As soon as the grapnel "bites," the ship is stopped, the cable is raised, and secured with chains by two of the crew lowered over the bows in a bosun's chair. This is difficult work at any time, but its hazards in stormy weather when high seas are running can be imagined.

Once aboard, the cable is sawn in two and each part is tested to find the fault. The sound part is sealed and thrown back into the sea with a buoy attached to mark its position. Then the other part is slowly hauled in until the breakage appears on the surface. Should the cable have been so damaged that it is broken in two, the grapnel is put in action again to pick up the other part. When the repair is completed the ship retraces its course to gather up the buoyed end, and after a final test of each part the cable is joined together again.

Section of the Anglo-Dutch cable laid in December 1947, showing the insulation and protection.

Apart from emergency repair jobs and routine inspections of submarine cables, the Post Office lays down new cables every year. Where such an operation has to be carried out across the North Sea or some comparable stretch of deep water, months of exacting preliminary work will be carried out by divers and deep sea engineers, and thousands of echo-soundings may be taken.

The most important undertaking carried out by the Post Office since the war was the laying of the new Anglo-Dutch cable in 1947. This is a new type that can carry 84 simultaneous telephone conversations without submerged repeaters, each transmitted on a different wavelength.

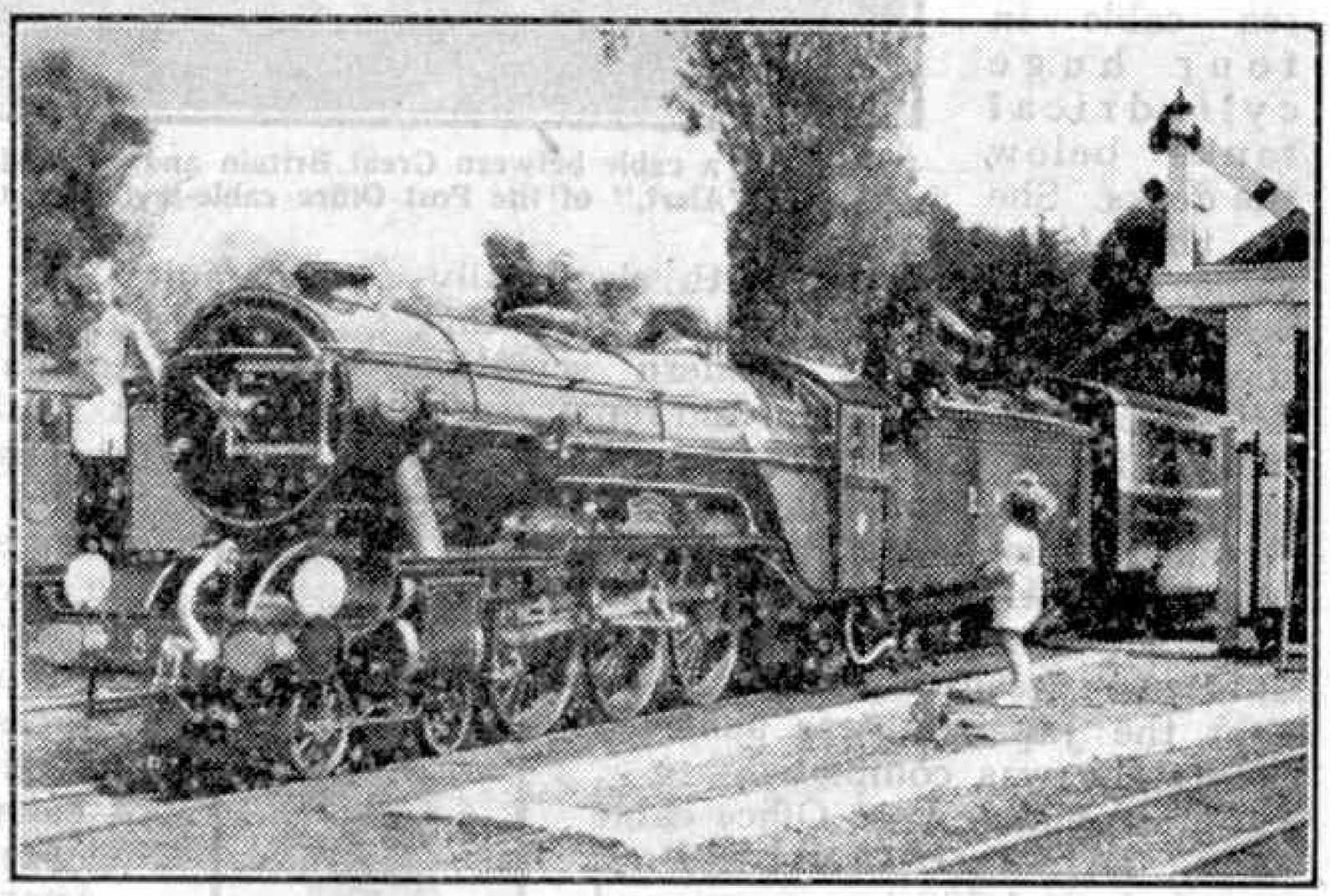
The World's Smallest Public Railway

Keeping the Wheels Turning

By R. A. Leeder (R. H. and D. Rly.)

DOWN on the Kentish coast is the Romney, Hythe and Dymchurch Railway, a 15 in. gauge system serving the places named in its title, with an extension to Dungeness, making a total length of about 14 miles. The railway dates from 1927 when the first section was opened between New Romney and Hythe, the Dungeness extension taking place in 1928-9.

With its one-third full size engines and its two-a-side rolling stock, the line, which is known as the World's Smallest Public Railway, does a full-size transport job for the area it serves. Its train services appear on a page to themselves in *"Bradshaw."* The system owes much of its popularity to the fact that its operation is carried out by real coal - burning steam locomotives that look just like real express engines scaled down. The admiration these excite is well shown in the cover to this issue, which has been prepared from a prize-winning photograph submitted by *"M.M."* reader P. W. Lang, Sevenoaks.



R. H. and D. 4-6-2 No. 8 "Hurricane" being admired by a youthful enthusiast talking to the driver at Hythe Station. Photographs to this article are by Raphael Studios, Hythe.

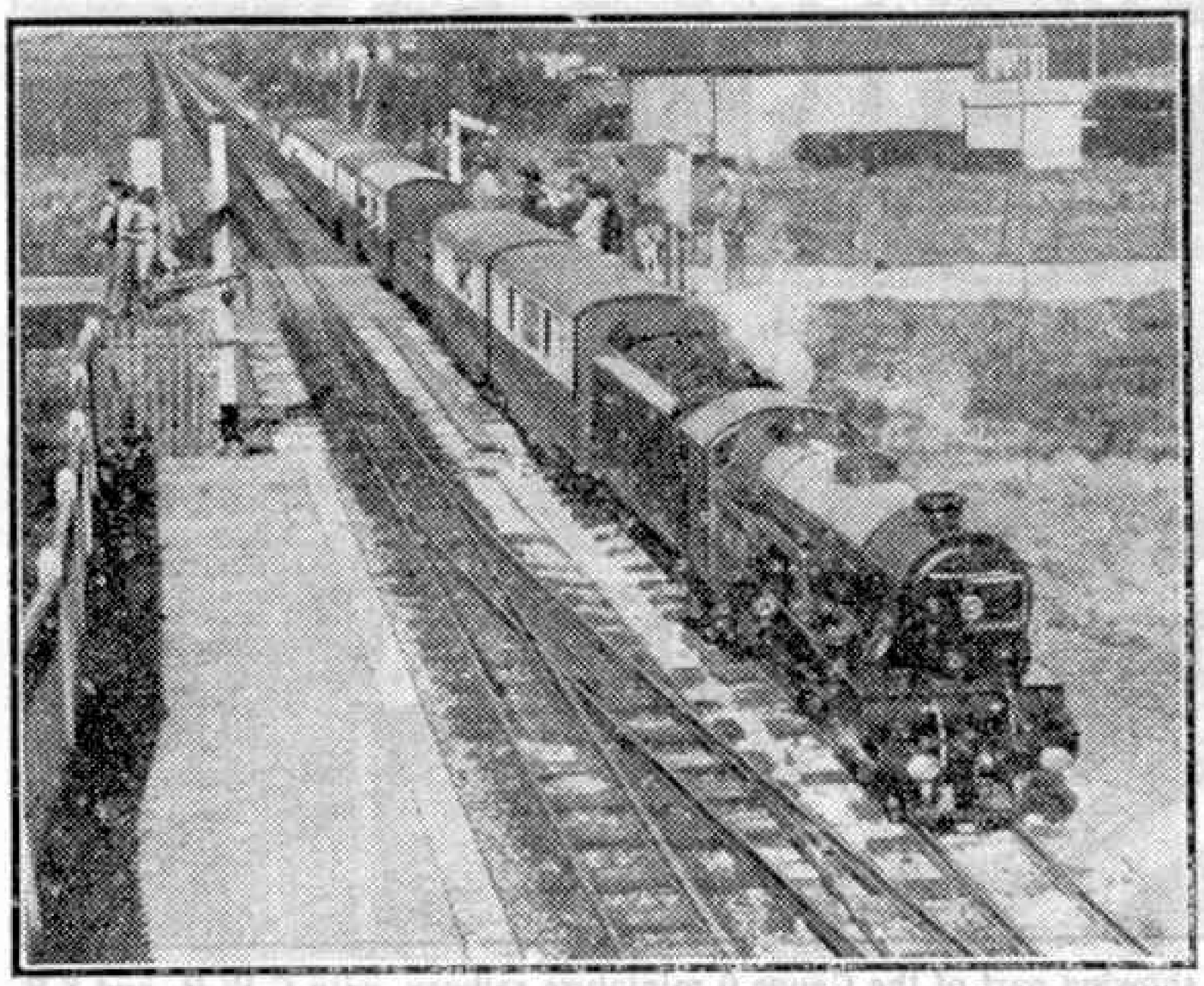
Any day during the summer months folk in the Romney Marsh area of Kent can hear the steady beat of the R. H. and D. locomotives as they wend their way from Hythe to Dungeness. Local people come to know them individually by their beat or whistle, and each engine can be identified by the railway personnel long before reaching New Romney.

Probably few of the travellers in the cosy well-sprung coaches realize the amount of work and organization necessary to keep these engines and rolling stock working at full pressure for six months of the year. Perhaps, when leaving New Romney bound for Hythe, they glance at the building on their left and speculate at the strange sounds issuing from it. A pneumatic riveter going at full blast, the sound of machinery running, perhaps an engineer outside cutting rails with oxy-acetylene plant. This is the shop where all our locomotives and rolling stock are maintained in first-class condition.

Here it is that the mighty little giants are refreshed every winter after their summer's labours. Two lines run into this shop. Overhead two 3-ton gantries span the roof and allow engines to be lifted clear of the rails. The shop is completely equipped with modern machinery and capable of dealing with any repairs, overhauls or rebuilds. A deep roomy pit enables us to work underneath the engines with ease.

The engineering staff are all enthusiasts and take a personal pride in turning out a first-class job. We do all our own machining, fitting, copper pipe work and boilersmith's work, castings and materials being the only things bought outside.

When necessary a locomotive is stripped down and completely rebuilt. It emerges from the paint shop, at Hythe, later, gleaming with fresh paint, polished steel



"Green Goddess" R. H. and D. No. 1 brings a train from Hythe over the level crossing into Dymchurch Station. Note the sturdy permanent way.

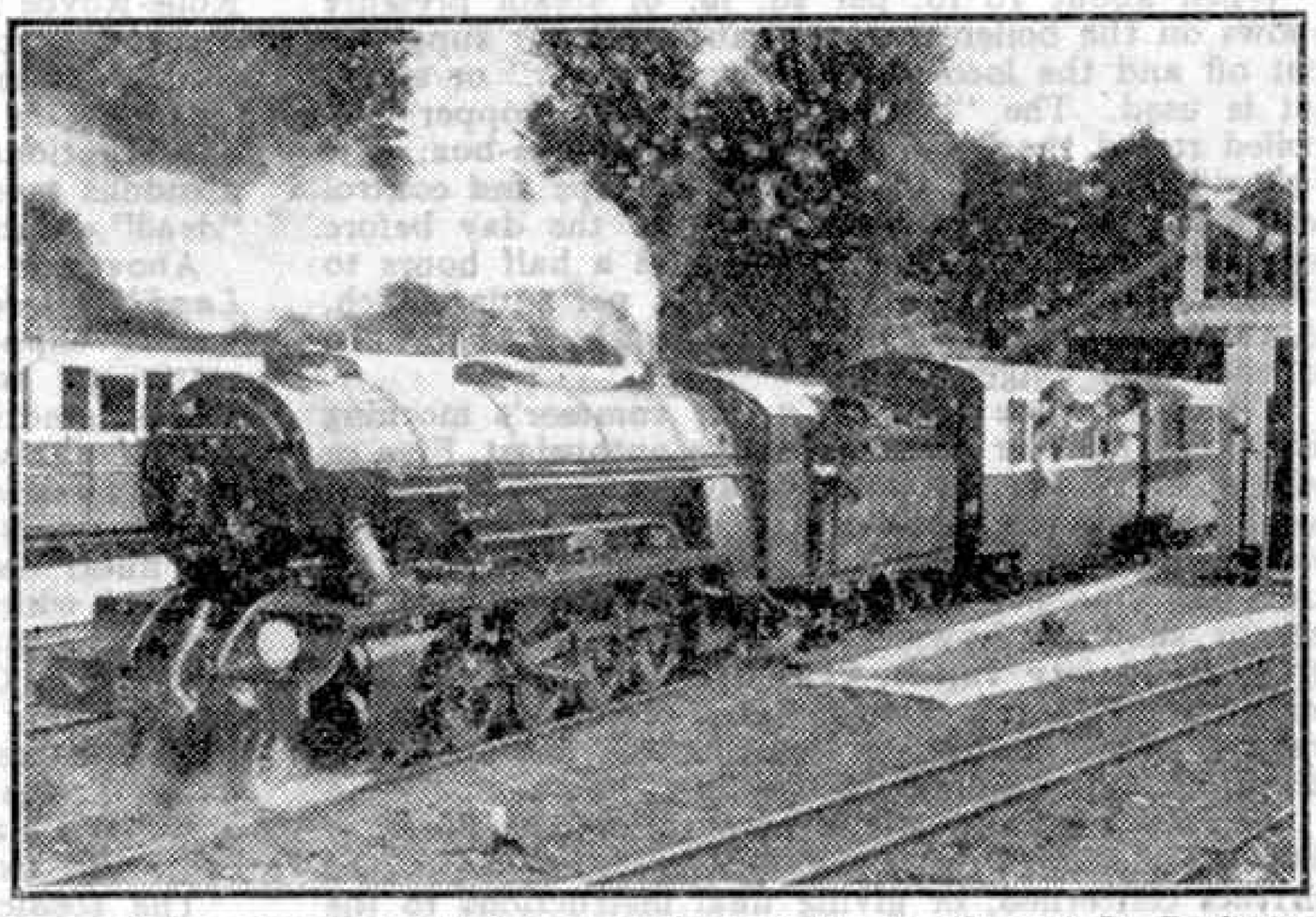
and copper; a thing of beauty guaranteed to bring exclamations of delight from our public, and well worth the efforts involved.

In the running sheds after a day's running you would hear many words strange to the layman spoken by Foreman Driver George Barlow and his drivers. How in the hot summer days the "road" (track) was bad at a certain place due to heat expansion of the metals; how the "pegs" (signals) were held against them, of sheep roaming on the road at certain places, and so on. Seldom are heard any complaints about the performance of the locomotives. Perhaps an injector has been giving trouble, usually by foreign matter getting through the filters into the suction cone and causing the injector to blow back; or maybe a sticking clack valve, or a leaking gauge glass is reported. These are troubles which may occur at any time, and they will be duly entered in the Report Book and attended to by the engineering staff.

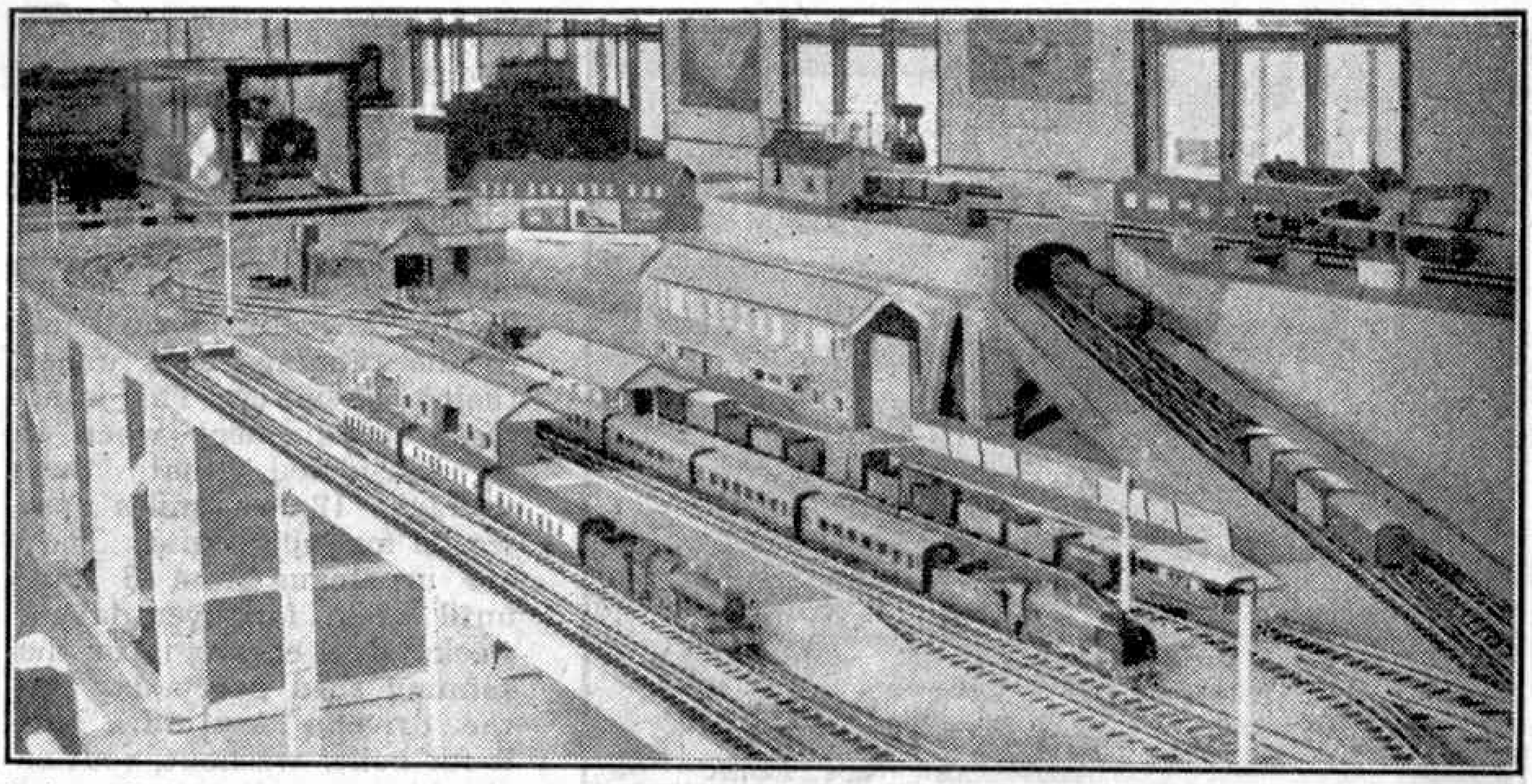
One of the worst enemies of the driver is poor steaming, usually caused by slatey coal making excessive clinker in the fire-box and thereby preventing the fire drawing properly. The only remedy is to wait until the terminus is reached, then break up the clinker with the pricker, and remove it with a long-handled fire shovel. In bad cases the fire-bars get completely covered with a hard substance not unlike almond rock.

Our engineers are proud of the fact that due to winter overhauls our engines run the whole of the season without any major mechanical breakdown; they always get back to the running sheds under their own power. This is no mean achievement when it is considered that they average 12,000 miles per season for each engine. They are in steam from 6 a.m. until 9 p.m. for seven days a week. One engine is in the running shed every day, on the driver's day off. This is for boiler washout, routine checking up, adjustments and any minor repairs such as replacing burnt-out fire-bars, grinding in steam valves that "weep," replacing any broken springs and repacking glands and similar jobs. This ensures that every engine is examined by an engineer every eighth day at least throughout the season.

An engine due for washing out next day finishes the day's run and is put in the shed just as usual. At 4.0 a.m. when the firelighters arrive they look at their engine roster, and note, say, that *"Typhoon"* is for washout that day. They then remove the washout plugs, and allow the boiler to drain off. This gives the boiler until 5.0 p.m. to cool off sufficiently for washing out. At 5 p.m. water is injected through the washout plug holes at high pressure,



One of the powerful 4-8-2 locomotives of the R. H. and D. Railway, No. 6 "Samson," leaving Hythe with a merry load.



A view of "Model Land" at New Romney, showing part of the Gauge 0 miniature railway, with G.W.R. and S.R. trains in the foreground.

and wires are inserted in the plug holes to rake out all sediment caused through hard water. After washout the boiler is filled with clean water until the water gauge shows "half-a-glass"; the washout plugs, having been previously graphited to make the work of removing them easy next time, are then replaced.

The firelighters noting the engines in service for the day set about preparing them. The fire-box is cleaned out and any clinker removed from the fire-bars, the boiler tubes are swept, an operation known as "tubing," and the smoke-box is cleaned out. After the water gauge glass shows that the water level is correct, wood, cotton waste soaked in paraffin, and coal are put in the fire-box and the fire is lit.

An extension chimney is fitted to the existing chimney of the locomotive lit up. This chimney is a length of steel tube about two feet long and the same inside diameter as the chimney; inside is a copper ring with three $\frac{1}{16}$ in. holes drilled in it facing upward. The compressed air supply is coupled to this ring. The air blowing upward through these small holes creates a vacuum in the smoke-box, and draws air through the boiler tubes, thus drawing the fire.

When about 15 lb. per sq. in. of steam pressure shows on the boiler pressure gauge, the air supply is cut off and the locomotive's own "blower" or steam jet is used. The "blower" is a similar copper ring coiled round the blast nozzle in the smoke-box; it is fed with steam from the boiler via a pipe and control valve in the cab. An engine in use the day before will take from one hour to one and a half hours to raise a working pressure of 180 lb. per square inch. A cold engine, on the day after washout, will take considerably longer.

The locomotive shed on a fine summer's morning is a fine sight for any locomotive enthusiast. Five or six engines with 180 lb. pressure, a lazy curling of smoke from the chimneys, and a faint haze of steam over the safety valves, can usually be seen standing outside. One perhaps is blowing off hard, a jet of steam shooting upward with a loud hissing noise from the safety valves. The drivers are busy oiling round and cleaning. One engine is coaling up, another taking water, a third is shunting the day's coaches from the many sidings to the main line.

All round is the bustle of preparation, the Foreman Driver checking over the engine turns with the drivers concerned, or giving final instructions to the Station Staff regarding a non-stop special train, or perhaps discussing the drivers' reports on yesterday's running with the engines.

New Romney is the nerve centre of the Railway. We have here the General Manager's Offices, Stores, Engine Sheds, Carriage Sheds, Coaling Dump and the Engineer's Department. Captain Howey, the Managing Director, a very keen locomotive enthusiast, can usually be seen around here. He often drives his own special engine "*Hurricane*" on the non-stop "*Bluecoaster*" run from Hythe to Dungeness. He takes a great personal interest in the working of the whole system and in the Staff.

Captain Howey personally supervises and inspects all the platelaying, for he holds himself responsible for the safety of the permanent way. Winter and summer in his special form of transport he is to be seen directing operations, one day levelling off a length of track, the next day perhaps a complicated set of points or a crossover is installed under his direction.

A few words on his mode of transport may be of interest. He uses a locomotive of unusual design. The main frames have the 4–4–0 wheel arrangement; the rear wheels are coupled together by driving chains, the front wheel arrangement is a standard bogie. A Rolls-Royce petrol engine of 40 h.p. complete with gearbox supplies the motive power. The whole unit is enclosed in a streamlined body painted in blue and cream. This "locomotive" is reputed to be capable of exceptionally high speeds, together with a tremendous tractive effort. I have seen it hauling five "dead" steam engines without any apparent effort.

Above the carriage sheds at New Romney is "*Model Land*." Here is a fine collection of scale models; yachts, clipper ships and a liner rub shoulders with stationary engines, marine engines, traction engines and locomotives of all gauges. Many of these fine models enclosed in glass cases can be seen running under electric power.

Two-thirds of "*Model Land*" is devoted to one of the finest Gauge 0 electric railways in this country, part of which is shown in the accompanying illustration. A star feature of this fine layout is a beautiful model of a G.W.R. "King," which can be seen any day hauling its scale coaches along. Goods and passenger trains pass and re-pass each other all day long. Trains pull into stations and start off again until it is hard to believe one is looking at models controlled from a switchboard.

The scenic effects, tunnels, sidings, goods yards, factories and rows of shops, all combine to make a fascinating, realistic display.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"LOCOMOTIVE PRACTICE AND PERFORMANCE IN THE TWENTIETH CENTURY"

By Cecil J. Allen, M.Inst.T., A.I. Loco.E.
(W. Heffer and Sons Ltd. 21/-)

No more suitable author than Mr. Cecil J. Allen could be found to deal with this subject. His deep knowledge of locomotive design and its influence on performance on the road, gained by close observation in the course of almost constant travel for over 40 years, gives an authoritative background for the contents of the book.

As is pointed out in the introduction, there has been hitherto no systematic published collation of the most outstanding performances of British locomotives on the road, and to many of the younger railway enthusiasts great locomotive feats of the past are almost legendary. So the author sets out to repair this lack, and in this task he is most successful. Actually he does very much more. In the course of its 300 pages his book deals competently and fully with the design and building of British locomotives, and their servicing, and with performance, taking the locomotives of each group in turn and giving attention to engines of pre-grouping days. The two great rivals of steam, electric traction and diesel-electric power, also are fully dealt with, and there are interesting sections on the locomotives of the Continent and North America and their performance, which provide interesting comparisons.

Mr. Allen also gives readers valuable guidance in train timing, based on his own long experience; and British main-line gradient profiles, tables and many other useful items add to the attractions of his work. There is a wealth of excellent half-tone illustrations and diagrams, and the book is one that can be heartily recommended to all who are interested in our railways.

"MODERN SHIPS"

By F. E. Dean (Temple Press. 8/6 net)

Ships never lose their interest, whether they are old-time sailing vessels or up-to-date steamers or diesel-engined ships, and there is a sure welcome for any good book dealing with them. Mr. Dean's story of the steel ships of to-day certainly answers this description, and it will be appreciated by every boy eager to learn something of the secrets of the fascinating art of the shipbuilder. The author tells how a ship is built from steel plates, girders and enormous castings, and explains how it takes to the water. The various types of engines that drive it and supply power for so many different needs are then explained in simple language, after which details are given of auxiliary equipment, including modern steering gear, electric generators and navigating instruments. Finally come sections on the "Queens" and other big ships, long-distance liners, refrigerating cargo ships, tankers, coasters and other types of vessels.

Excellent reproductions of photographs and line drawings add to the attractions of the book.

"THE BOYS' BOOK OF SOCCER"

(Evans. 10/6 net)

The 1950 edition of this annual is fully up to the standard of previous issues. It contains stories of the chief matches of last season, and includes portraits in colour of famous players, with details of their careers. Football tactics, training and other practical details of the game itself are also dealt with, and there are stories, puzzles and cartoons.

Pages of soccer records, oddities of football and the laws of the game complete a very fine volume, which is well illustrated by reproductions of photographs, line drawings and diagrams.

"MY BEST RAILWAY PHOTOGRAPHS"

(No. 14). By H. Gordon Tidey
(Ian Allan Ltd. 2/-)

Mr. Tidey has made an excellent selection from the many fine pictures he has taken during the 42 years he has devoted to railway photography. With him the reader progresses from the times when slim "single-drivers" could still be seen on main line trains, through the period of stately yet elegant "Atlantics" and 4-6-0s to the day of the modern "Pacifics," and there are many contrasts in rolling stock and in signalling installations for the enthusiast who has an eye for these things.

Copies can be obtained from bookstalls or bookshops at 2/-, or direct from the publishers at 33, Knollys Road, Streatham, London S.W.16, price 2/2½ including postage.

"CHEMISTRY EXPERIMENTS AT HOME"

By H. L. Heys, M.A. (Harrap. 10/6 net)

Simple chemistry is really good fun for boys and girls. It not only gives them opportunities of making things and carrying out experiments, but also has the right air of mystery about it. Mr. Heys gives full instructions for carrying out a wonderfully attractive series of experiments that are both interesting and safe, and any reader who carries them out will thoroughly enjoy himself. He will also learn a good deal about chemistry in a far more attractive way than is possible with school lessons only as a guide.

The volume is of good size, and contains so much of interest that it is impossible to indicate fully what its contents are. These include notes on apparatus and its use, details of chemical operations, including glass working, and a host of experiments on simple chemicals that introduce the reader to interesting gases, crystals, simple chemical tests, dyeing and the uses of common chemicals in the home. There is a special section on chemical tricks, guaranteed to amuse and mystify onlookers, another on electric cells, and one on plastics.

The excellent illustrations include eight full page plates and 73 drawings.

"ALL STATIONS TO MANCHESTER"

By Stanley Chadwick
(The Venturers Press. 1/6 net)

A recent railway centenary of considerable local interest has inspired this book, which tells the story of the Huddersfield and Manchester Railway, opened in 1849. The local and political squabbles common to many early railway schemes were not absent from the early history of this line. They form the subject of the first two chapters of the book, and in the rest we see how the line to Manchester was completed, and that to Penistone built.

The book has two very good half-tone reproductions showing respectively the Marsden entrances to the Standedge Tunnels and the Lockwood Viaduct, and the cover shows two views of Huddersfield station.

"SMUGGLER'S BAY"

By E. E. Ellsworth
(Lutterworth Press. 4/- net)

Stories of the great days of smuggling never lose their relish and Mr. Ellsworth's book is an interesting addition to their number. Dan Tarry comes from London to live with his grandfather in a Sussex fishing village. The real business of the village is smuggling, and it is not long before Dan runs into real trouble, for efforts are made to force him to join the gang. How the dangers he encounters are overcome makes up a good story that readers will enjoy. There is a coloured frontispiece.

The Fork Lift Truck

Handling and Stacking Made Easy

AT practically every stage of almost every industry things have to be handled. They must be picked up and carried, hoisted, stacked, taken down and loaded on trucks at successive stages of the processes through which they pass. This handling begins with the raw materials taken into a factory and continues right to the delivery of the finished goods.

It is surprising to find how much time and labour go into all this. Reliable figures indicate that more than a fifth of the average cost of producing the world's manufactured articles lies in handling charges, and nearly a third of the time required to produce all manufactured goods is devoted to picking up, carrying, putting down and similar operations. In certain industries the proportion of time and cost spent in this is astonishingly large. For instance, it has been calculated that in mechanical engineering 59 tons of material have to be handled for every ton of manufactured product.

A Coventry Climax fork lift truck raising a motor car on its lifting carriage. The illustrations to this article are reproduced by courtesy of Coventry Climax Engines Ltd.

It must be borne in mind that handling costs add nothing to the value of a product, although of course they increase its price. In addition they absorb a large amount of labour that could be used in other ways to far better advantage. Means of reducing handling time and labour therefore are of the greatest importance. One of the finest aids in bringing this about is the fork lift truck, which every day is finding more and more uses in industry.

The beginning of the development of the fork lift truck can be traced back to the ordinary hand truck, something like a porter's barrow. This allowed material to be moved with reasonable speed and ease, but there still remained the problem of loading it and unloading it, to say nothing of the handling still necessary for stacking or in making ready for work on it. The next step was to design a truck with a low platform that could be run under the material resting on battens so as to leave the necessary space beneath it. A mechanical device operated through the handle of the truck then raised the platform sufficiently to lift the load off its battens, and a similar reverse movement lowered it into the new position to which it was taken. In many instances the materials to be dealt with were loaded on pallets, platforms of wood with battens fitted underneath, and they stayed on these during transfer and storage.

The final stage in the development of the fork lift truck came when the need for raising the load to greater heights was realised. The first machine of this type was developed in Liverpool docks during the first World War, but no further progress was made for some years, as labour was then comparatively cheap. Growing costs revived the idea and gave us the fork lift truck as we have it to-day. In this the truck platform is replaced by forks that can be inserted under the load to be moved, and the forks are mounted on a carriage that can be raised to any convenient height on a mast. The addition of this vertical movement gave a machine for which countless uses in the handling of material can be found, and greatly reduced the time and labour required for these operations.

An outstanding example of the modern

Stacking with the fork lift truck. The cases are carried on pallets, which are raised and placed in position by the machine.

fork lift truck, made by Coventry Climax Engines Ltd., Coventry, is shown at work in the illustrations on this page, and on page 422 there is an illustrated description of the fine model of this truck now included in the Dinky Toys Series.

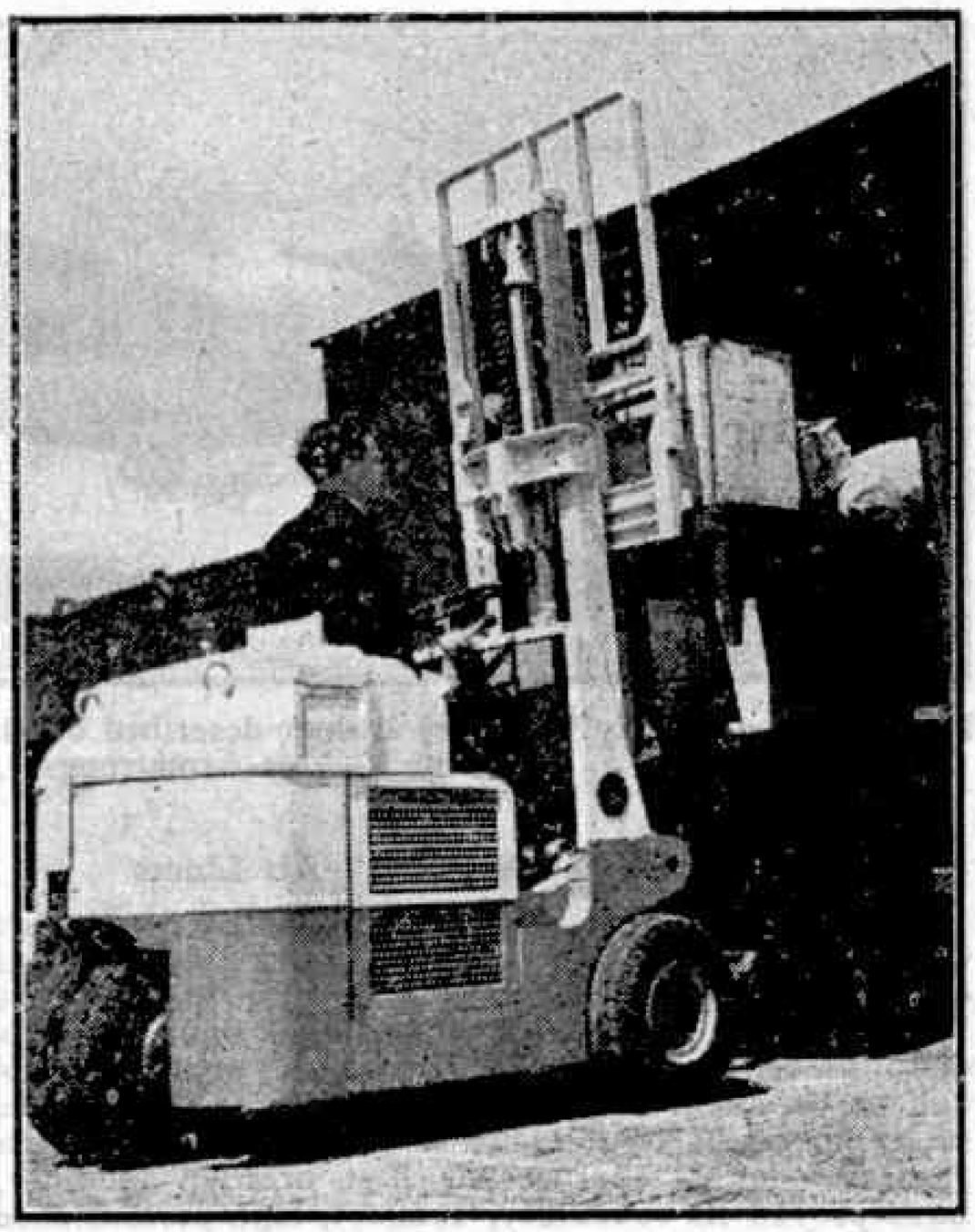
In this fork lift truck a petrol or diesel engine provides the power required both for running and for lifting. The machine is made in a range of models handling up to 6,000 lb., or nearly 3 tons, and raising loads to heights of up to 12 ft. It is provided with pneumatic tyres on its three twin wheels. Steering is effected through the twin rear wheels, and the truck is driven in exactly the same way as the motor car. The use of closely spaced rear wheels gives what is practically a three point contact with the ground, a plan that results in stability when moving over an uneven surface.

A special feature of the truck is the hydraulic steering mechanism, which avoids the use of linkage joints, which are liable to wear and require constant maintenance. Another effect is the elimination of road shocks to the steering wheels when travelling over rough ground. There are two forward speeds and two reverse, controlled by two gear levers, and the final drive is through a worm and worm-wheel and a differential. Hydraulic brakes are provided on the front driving wheels, and there is a hand brake for parking.

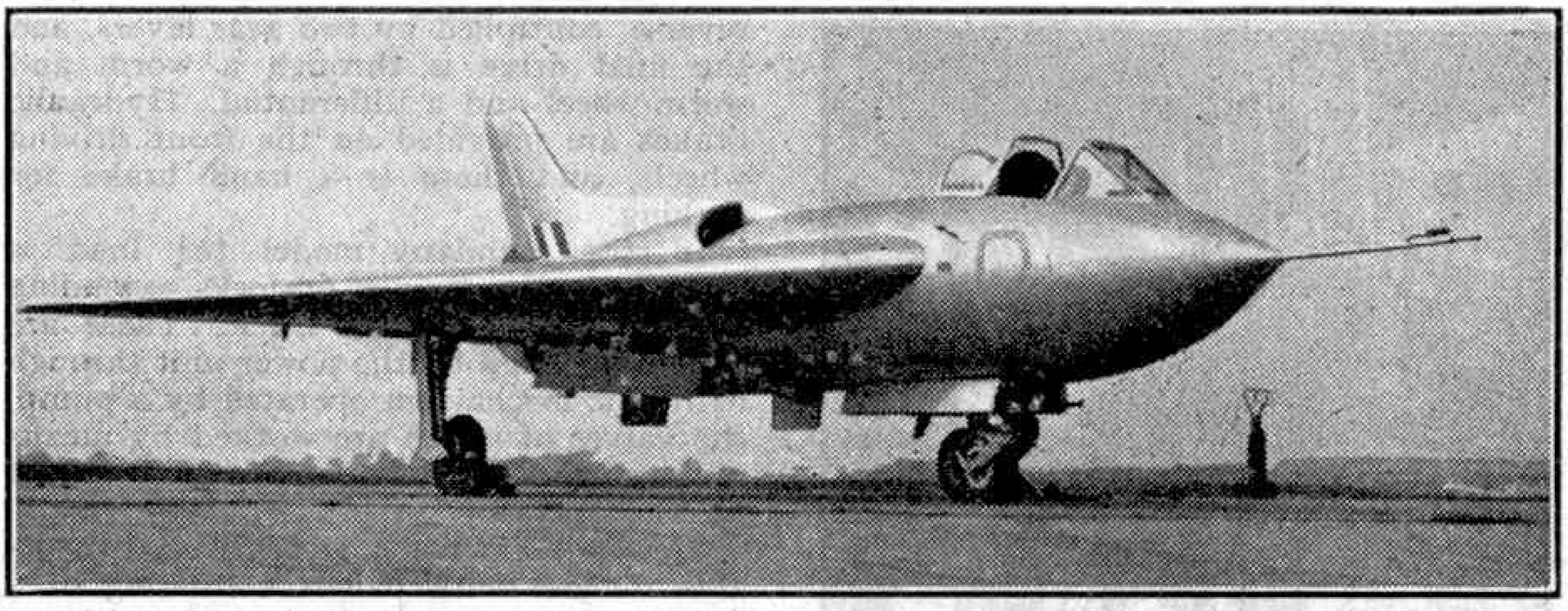
In the standard model the load is carried by two fingers or forks extending from the front of the truck. These are tilted and lifted by the power unit through hydraulic mechanism operated by a pump, the valves of which are worked by means of two hand controls conveniently placed for the operator.

The fork lift truck is particularly suitable for use with pallets consisting of a flat wooden or steel framework with an upper surface on which material is stacked and a lower one that rests on the ground. Between the two is a space into which the forks can enter, and the framework is suitably braced to give strength and rigidity.

It is interesting to watch a Coventry Climax fork truck in operation and to see how easily and speedily it carries out its work. When picking up a load the tilt lever is depressed so that the mast carrying the lifting forks tilts slightly forward, bringing the top surfaces of the forks parallel with the ground. The forks are then lowered sufficiently to enable them to enter under the load, which they do with the minimum of (*Continued on page 430*)



Loads can be placed inside a railway van, or taken out of it, by the fork lift truck.



Avro 707 delta-wing research aircraft. Photograph by courtesy of A. V. Roe and Co. Ltd.

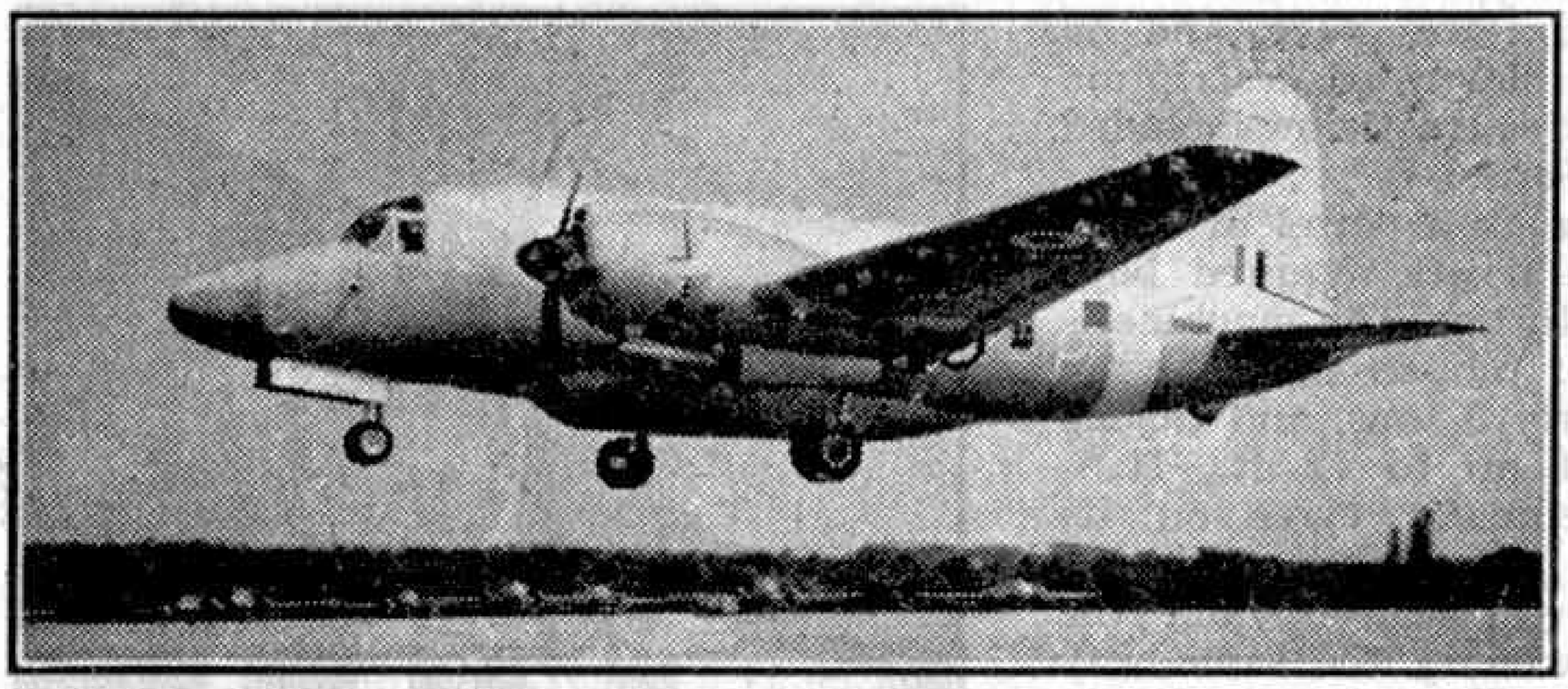
Air News

By John W. R. Taylor

Britain's First Delta-Wing

Most secret of all British aircraft shown at this year's S.B.A.C. Display at Farnborough was the little Avro 707 delta-wing research aircraft illustrated on this page. It was, in fact, taken off the secret list only one day before the Display opened, to give a preview of the advanced designs now taking shape in our factories, to follow our present range of world-beating military and civil jets.

Little may be said about the 707 yet, except that it is powered by a Rolls-Royce "Derwent" engine. It is thus in about the same class as the little Convair 7002 described in the July 1949 *"M.M."*



The Vickers "Varsity" military trainer described on this page. Photograph by courtesy of Vickers-Armstrongs Ltd.

First Order for "Viscount" Air Liners

At long last, both British European and British Overseas Airways Corporations have plucked up courage and placed a joint order for the Vickers "Viscount" 40-passenger "propjet" air liner. This is undoubtedly a bold step, for there are several questions yet to be answered on the economy and operation of jet air liners. But many hours of test flying with the "Viscount," the world's first propjet air liner, have proved its reliability, comfort, high performance and small maintenance requirements.

With 20 "Ambassadors" already on order for its short high-density routes, and the "Viscounts" for its medium and long-distance routes, B.E.A. will have one of the world's finest and most up-to-date fleets of aircraft in 1951–52. Together with "Rapide" replacements now being designed for secondary routes, they will enable the Corporation to increase by 50 per cent. its volume of traffic, with corresponding financial benefit to the tax-payer!

The "Viscounts" ordered by B.O.A.C. will be used by its associate Company, British West Indian Airways, which links the widely-separated islands of the Caribbean area with the United States, Central and South America.

It is almost certain that other airlines will follow the lead given by B.E.A. and B.O.A.C., and there have already been reports that the privately-owned Australian National Airways intend to fly "Viscounts" in direct competition with the "Convairliners" of their state-owned competitor, Trans-Australia Airlines. As the "Convairliner" is probably the best 40-passenger piston-engined air liner at present in service, the results would be very interesting.

New British Trainer

The Vickers "Varsity" military trainer, illustrated here, has been developed from the "Valetta" transport which is now in widespread service with R.A.F. Transport Command. It uses the same basic, well-proven airframe and "Hercules" engines, but has a nosewheel undercarriage and a large pannier under its fuselage containing prone positions for bombing instructor and pupil.

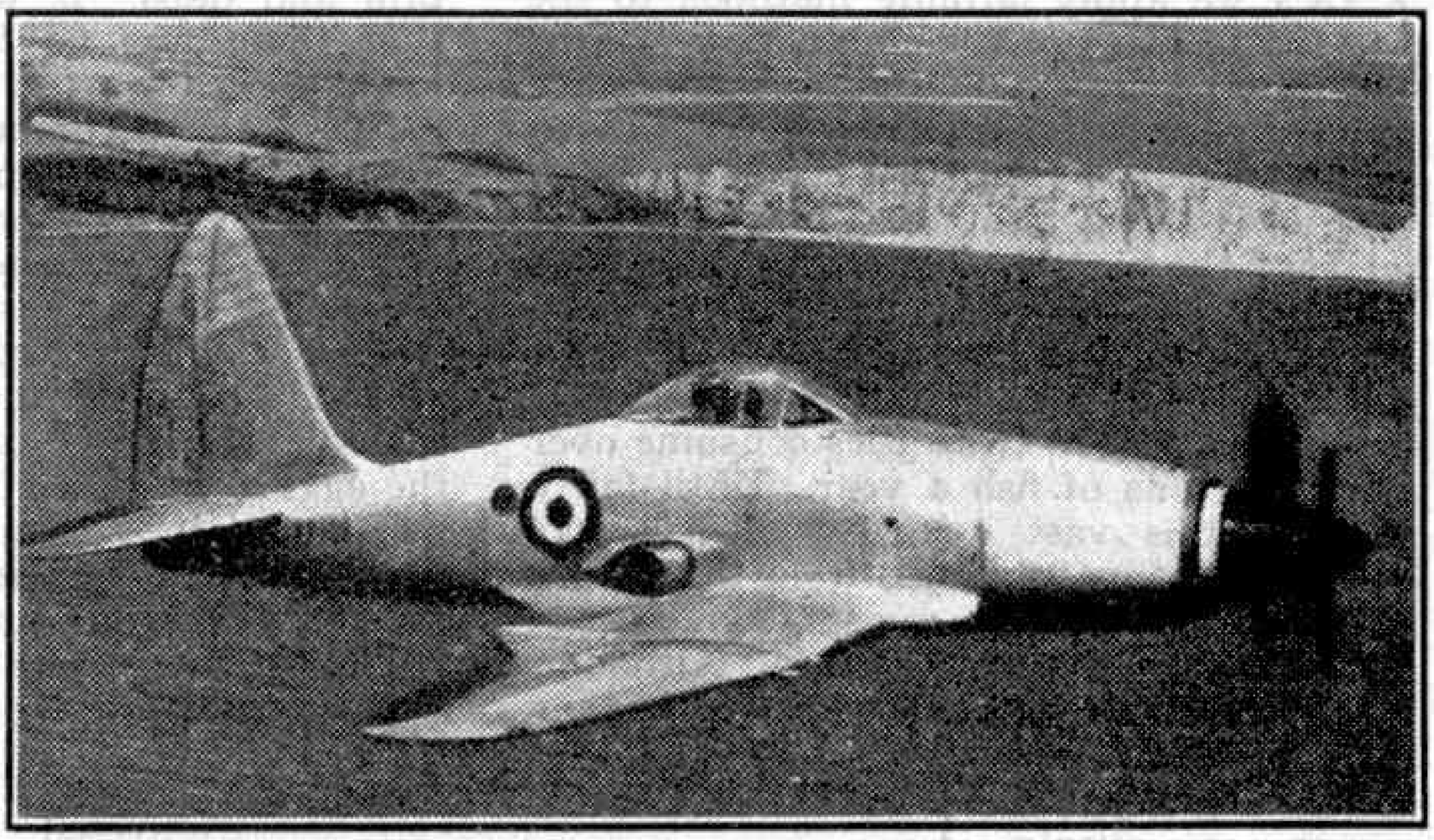
Object of the "Varsity" is to combine in one aircraft all the facilities necessary to train pilots, navigators, bomb-aimers and radio-radar operators. Long range and big payload enable a considerable amount of training to be accomplished during a single flight, with consequent saving in time and expense. Maintenance has been simplified by the adoption of "petal" rearward-opening engine cowlings. Safety features include a fixed tailwheel for protection in a taildown landing, fore and aft emergency exits and pull-in type cabin windows.

At present Vickers have orders for only two prototypes, but the "Varsity" could be put into production very quickly, if necessary, as it could be built largely of "Valetta" components on "Valetta" jigs.

Propjet Naval Fighter

The new Westland "Wyvern" TF2 single-seat strike fighter, shown on this page, has been developed for service aboard the Royal Navy's aircraft carriers, and is the first propjet-powered warplane to go into production anywhere in the world.

It is basically similar to the piston-engined "Wyvern" TF1, but the extra power and lighter weight of its 4,000 h.p. "Python" propjet should improve performance without detracting from any of the other qualities essential to a deck-fighter. The comparatively small diameter of the "Python" results in a cleaner nose and gives the pilot an excellent view forward and downward for landing. Powerful wing flaps help to keep touch-down speed to a minimum; the wings themselves fold for easy stowage aboard ship.



Westland "Wyvern" TF2, the first propjet military aircraft to be put into production. Photograph by courtesy of Westland Aircraft Ltd.

The under-wing radiators of the earlier version have gone, but an obvious addition is a large jet exhaust pipe on each side of the fuselage under the cockpit. Just behind and above the starboard one is what looks like a window for a reconnaissance camera. Fixed armament is probably four 20 m.m. cannons, while the aircraft's designation indicates that it can carry also a torpedo as alternative to rockets and bombs. Performance details are secret, but the "Wyvern's" speed should be higher than that of any comparable aircraft in the world.

The big advantage of jet engines for naval aircraft is that they operate on kerosene, which does not burn so readily as petrol. Consequently aircraft carriers need no longer be floating petrol stations, like their counterparts in World War II, which could be turned into an inferno with one well placed bomb.

Aircraft Combat Paralysis

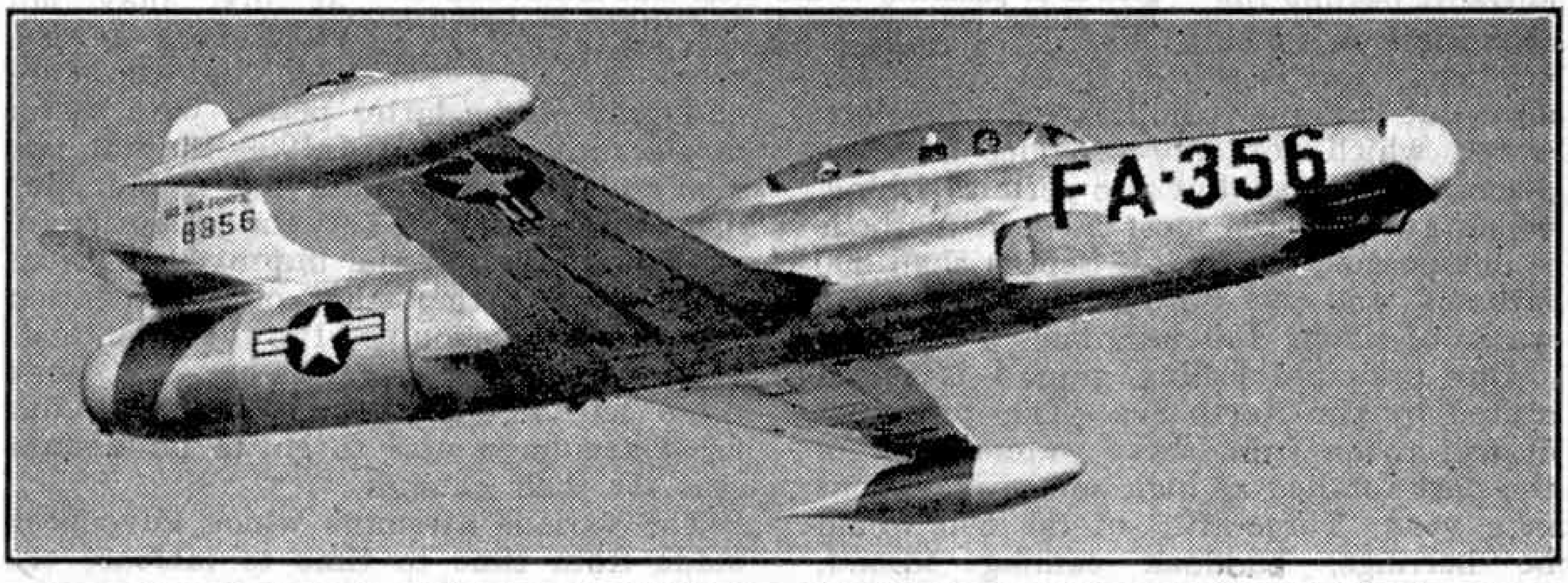
Alarmed by a sharp increase in the number of cases of infantile paralysis reported this year, several American townships have enlisted the aid of aircraft to help combat the disease. The south-western corner of San Antonio was sprayed with DDT by 16 "Mustangs" of the Texas Air National Guard, in an effort to wipe out the town's fly and mosquito population. Each aircraft carried enough spray in two tanks under its wings to cover a strip one-third of a mile long and 1,200 ft. wide. Together they achieved in 12 sec. what would have taken five days by ground-spraying methods.

The small town of Springville, New York, did not need a whole squadron of "Mustangs," so chartered a Bell helicopter to spread DDT spray over nearby swamps, stagnant pools, backyards, and a river which meanders through the town.

Rocket-Nosed "Shooting Star"

Lockheed have been experimenting for about two years with a rocket-nosed "Shooting Star" for the U.S.A.F. Looking like a stubby javelin projecting from the nose, the rocket is about 8-12 in. in diameter. The pilot is protected from its blast by a special firewall, the rocket flames being ejected through a hole in the underside of the aircraft nose. The idea is not altogether new, as the Germans mounted a battery of small rockets in the nose of their tiny "Natter" rocket-interceptor, but this is the first indication of American interest in the project.

Another new version of the "Shooting Star," illustrated below, is the F-94 two-seat night fighter. It is similar to the TF-80c two-seat trainer described in the April 1949 "*M.M.*," but has a redesigned nose containing radar search equipment, and an after-burner in the rear part of its fuselage.



First flight picture of the Lockheed F-94, the U.S. Air Force's new all-weather jet fighter.

Farming the Sea

By Harold J. Shepstone, F.R.G.S.

CAN we apply farming methods to the sea to increase the production of fish? To find the answer to this question some interesting experiments are being carried out in one of the Scottish lochs, in which the sea is being treated with fertilisers to increase the supply of plankton on which fish feed.

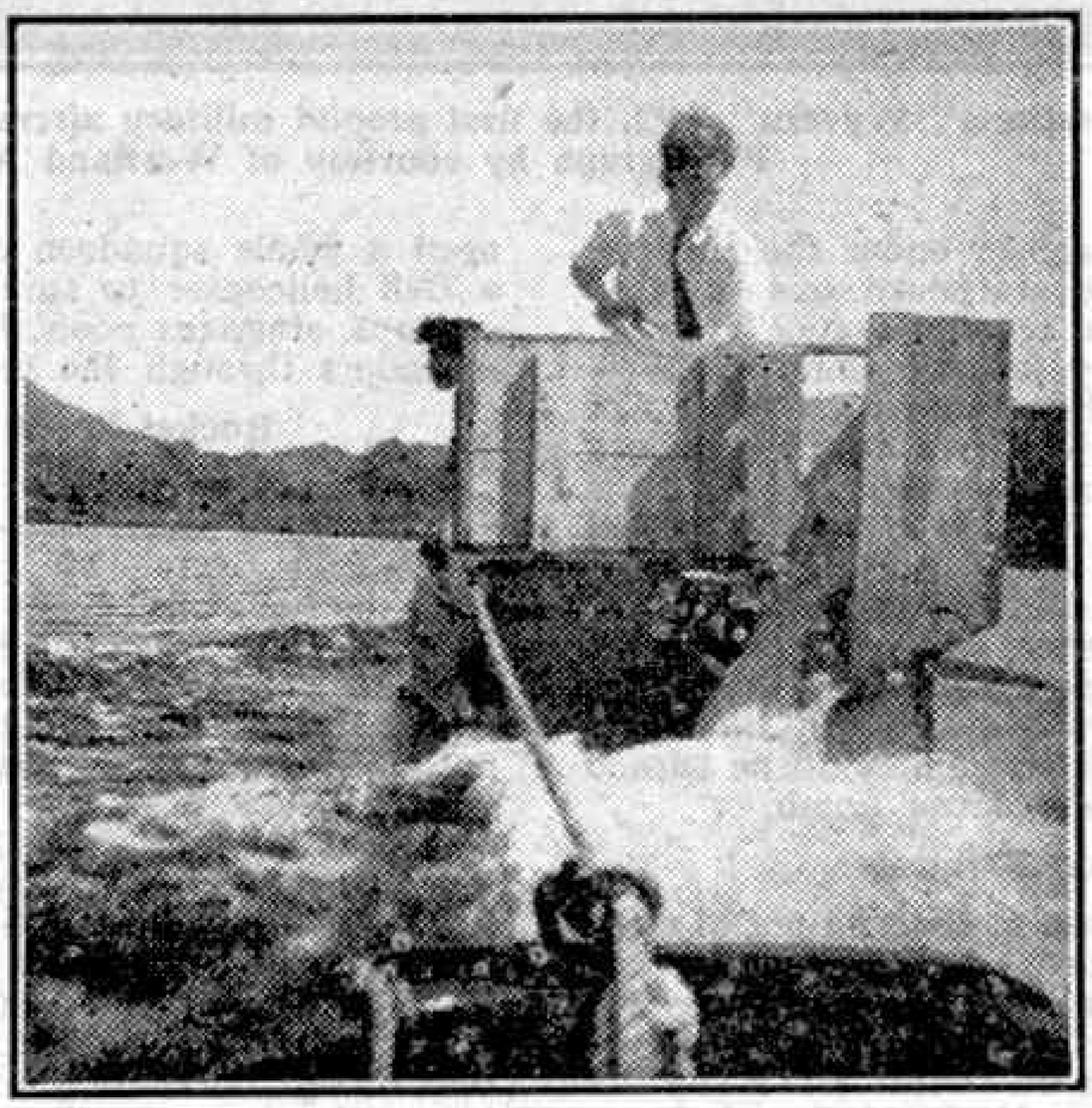
The question of increasing our food supply, be it fish or anything else, is important. We in these isles consume over a million tons of fish a year. Until fairly recently this vast quantity of fish was obtained by our fishermen from the fishing grounds around our coasts, which are among the richest in the world. Although the sea is distributed fairly evenly over the globe, the fish in it are by no means so evenly distributed. There are fish in every sea, but the great fishing grounds lie in the northern hemisphere, and the vast open spaces in the centres of the ocean are, comparatively speaking, unpopulated and unfinished.

Various reasons contribute to the richness of our home fishing grounds. We can trace it to the movements of currents feeding the organisms on which fish feed. But it is also due to the comparatively shallow water, which not only provides breeding places for the fish, but also permits fishing, which even by the most modern methods is not possible at greater depths than 300 fathoms and is mostly carried out in water of about 100 fathoms.

Our principal fishing ground is represented by the North Sea. The quantities of fish taken from these waters have in the past totalled as high as a million tons in a year. Three-fifths of the fish would be herrings, haddock coming second, followed by cod, plaice, turbot, whiting, brill and dabs. It was said at one time that there was no fear of the fish ever forsaking this great breeding ground or of the stock becoming seriously depleted, despite the fishermen's heavy toll, owing to the wonderfully prolific nature of these creatures. For instance, the turbot spawns 10,000,000 eggs a season, the codfish 9,000,000, the mackerel 700,000, the red gurnard 400,000, the brill 200,000 and the sole 85,000. But the wastage among the eggs and smaller fish is almost beyond belief, and it is calculated that only two eggs on an average from each pair of fish survive to the breeding age.

This means there is a limit to the quantity of fish in the sea, and the quantity also that can be taken. One cannot fish indefinitely and the great fishing grounds are now overfished. This is evidenced by the fishing returns. From 1909 to 1913 fishermen of every nationality in the North Sea took on an average fish, other than herrings, to a total of 434,000 tons a year. From 1929 to 1932, that is 20 years later, with all the improvements in ships and gear, they took 428,000 tons a year. True, the difference at first may not seem very noticeable, but the ships and gear of the latter period were so far in advance of those of 1909–13 that two men could catch as many fish as four men had done before. Yet the quantity of fish obtained with the improved methods was no more than that obtained earlier with much less trouble. Improved methods at first gave heavier catches, but soon these fell off, with the result that our fishermen have now to go to far distant seas for their catches.

The various attempts which have been made from time to time to increase the fish population by adding large quantities



Fertilising Loch Craiglin, Argyllshire, to encourage the growth of plankton, or fish food. The illustrations to this article are reproduced by courtesy of Imperial Chemical Industries Ltd.

of eggs or fish fry to selected areas and other devices have shown that it is entirely a question of providing suitable food. If the right food is forthcoming the fish increase. It was Dr. F. Gross, of the Department of Zoology at the Edinburgh University, who discovered how the food contents of the water may be increased by adding measured quantities of such inorganic fertilisers as nitrates and superphosphates. These encouraged the growth of those microscopic plants known as plankton, which float in the upper layers of the water and on which all fish feed.

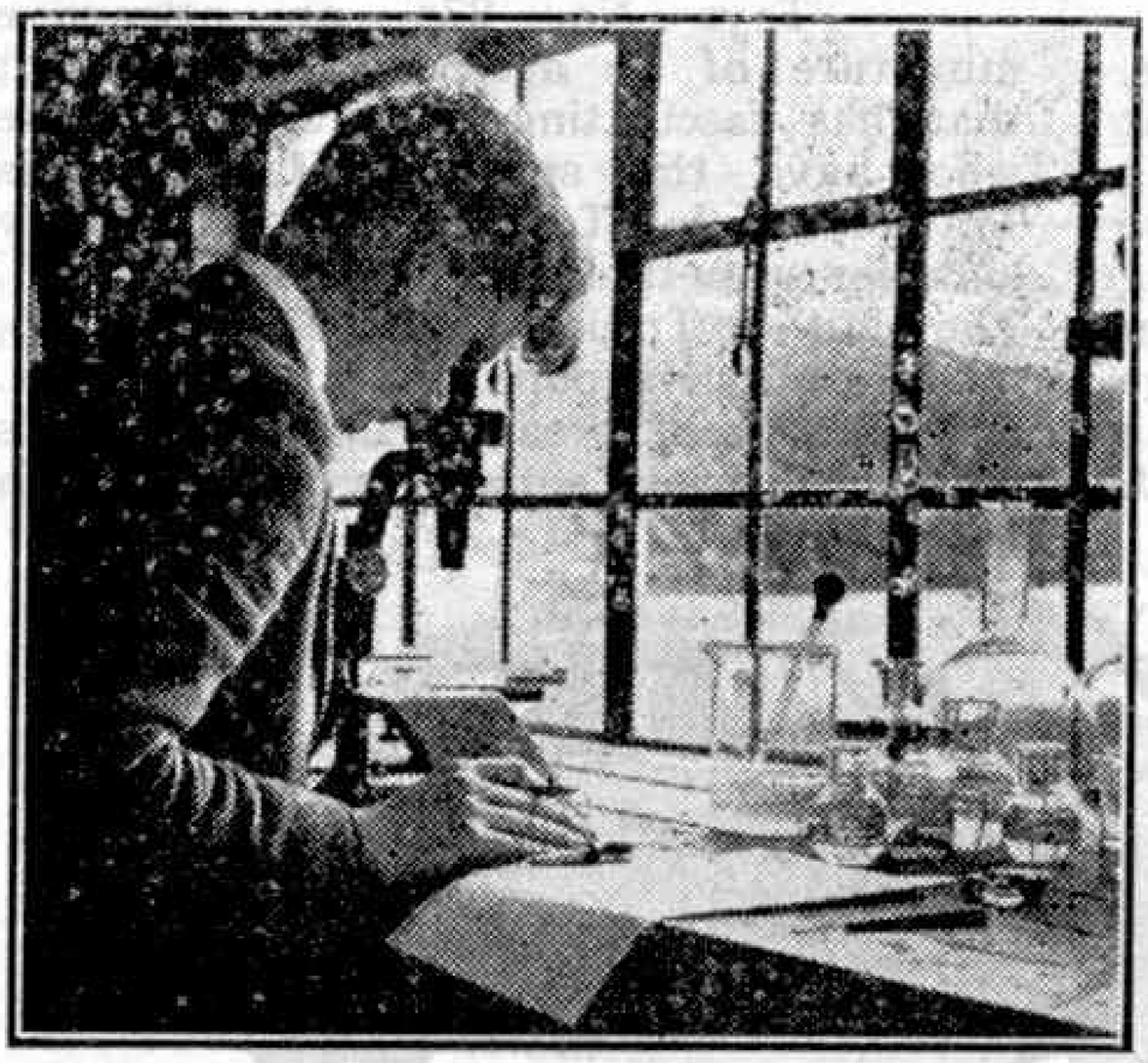
The result of the discovery was a series of experiments carried out on the Scottish lochs. In 1942–3 Loch Craiglin, an arm of Loch Sween in Argyllshire, was used for these trials. It has a water area of some 18 acres. After a thorough hydrographic survey of the loch the first "dressings" of superphosphates and sodium nitrate were scattered over the water surface from a boat. While this fertilisation was going on about 3,300 young flounders were brought in. In the two years of the experiment, the total amount of fertiliser added at intervals was 600 lb. of sodium nitrate and 400 lb. of superphosphates.

Analysis of the contents of the fish caught during the winter showed that they were feeding well. To put the matter simply, fish in Loch Craiglin were taking winter meals of 200 organisms, whereas in the neighbouring untreated open loch fish were having to make do with an average of 10 to 20 organisms per meal. In June 1943, at the height of the growth season, the fish were getting an average of 1,520 organisms per meal. In less than two years the fish had grown to a size and weight equal to that of fish in their original home of double their age. At one time the population of Loch Craiglin was more than 1,000 fish per acre, but owing to the fertilisation of the water there was sufficient food for all.

Emptying a water bottle after submersion in the loch. The contents of the bottle will be carefully examined later.

The experiment has been extended to Kyle Scotnish, an area of 200 acres, with immediate access to the open sea via Loch Sween. If the same successful results are achieved here a still larger loch will be tried, and the next logical step would be to try fertilising inshore waters. This would mean "farming" many valuable fish, particularly shell fish, on a large scale. There is the question of tides and currents, but scientists see no reason why these should not be surmounted and our sea food increased accordingly.

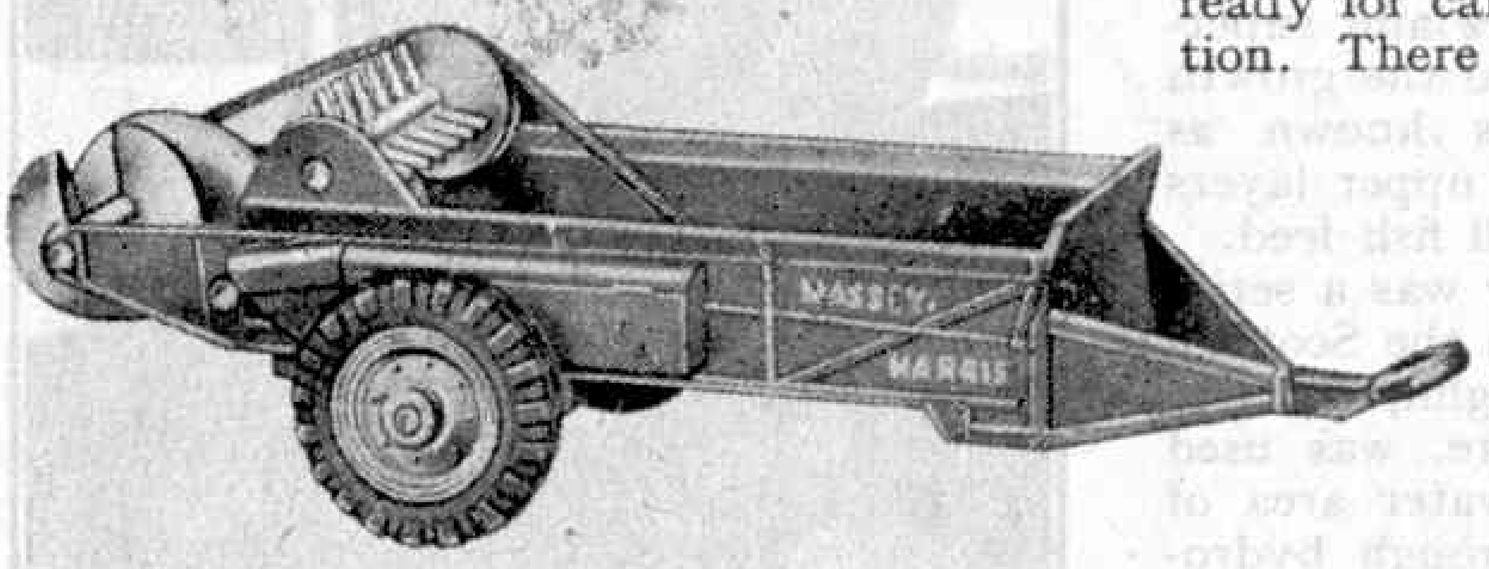
Experiments have shown that fish will seek those waters where food is plentiful. If therefore inshore waters are treated with the necessary fertilisers fish will resort to them. This would be to the benefit of the fishing industry, insuring good catches with the minimum of toil and risk. To-day our fishermen have to go far afield for their catches, which would not then be necessary. Indeed, farming the sea is full of possibilities. It would increase our food supply and render fishing less risky.



Estimating the plankton content of water with a microscope. The comparison of samples taken over a long period shows whether fertilisers are effective or not.

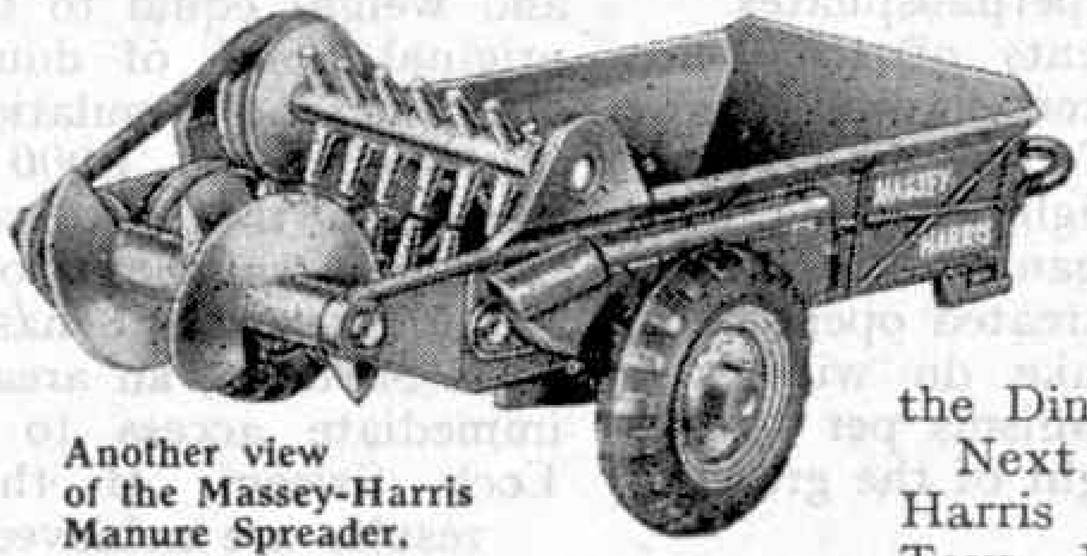
New Dinky Toys

Coventry Climax Fork Lift Truck, Ford "Fordor" Sedan, Massey-Harris Manure Spreader, Grass Cutter



Massey-Harris Manure Spreader, Dinky Toys No. 27c.

THIS month we have a good range of new Dinky Toys, all very interesting and entirely different in type. The first is the Coventry Climax Fork Lift Truck, Dinky Toys No. 14c, an outstanding production. Its prototype is the ingenious machine described and illustrated on page 416 of this issue, which has been introduced to reduce the handling costs of materials of all kinds and to speed up operations in works, warehouses and docks.



Another view of the Massey-Harris Manure Spreader.

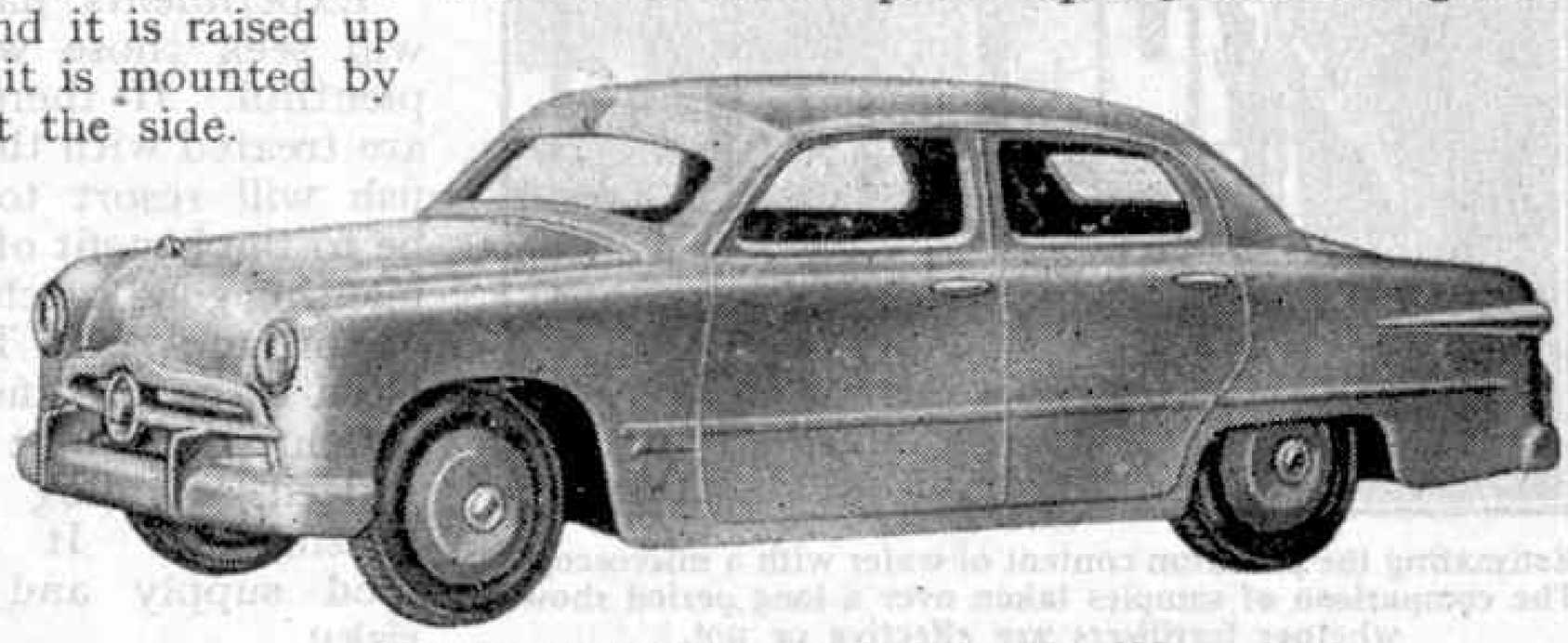
The Dinky Toy runs on three wheels, two in front and one behind, so that three-point suspension is provided, giving stability on uneven ground. A miniature driver is seated at the car type steering wheel. The carrying and lifting mechanism is in front of the machine. The carriage has a good backrest and two projecting fingers or forks that slide under the load to be lifted, and it is raised up the mast on which it is mounted by turning a handle at the side.

It is easy to run the truck forward, to pass the forks under the load to be lifted, and then to raise this by means of the handle until it is clear of the ground and ready for carrying to its intended destination. There if necessary it can be raised to the full height of the mast. This model is indeed a handsome addition to the Dinky Toys series.

The Grass Cutter, Dinky Toys No. 105e, is a simple but attractive addition to the gardening range. It is a miniature of the light type of lawn mower used in thousands of small gardens. The drive is taken from the side wheels instead of from the roller, as in the larger Lawn Mower, Dinky Toys No. 751. The cylinder, with its six blades, revolves in a most realistic manner, and underneath there is the sole plate over which the blades pass in turn.

This miniature will be recognised at once as just the companion for the Garden Roller and Wheelbarrow—already included in the Dinky Toys range.

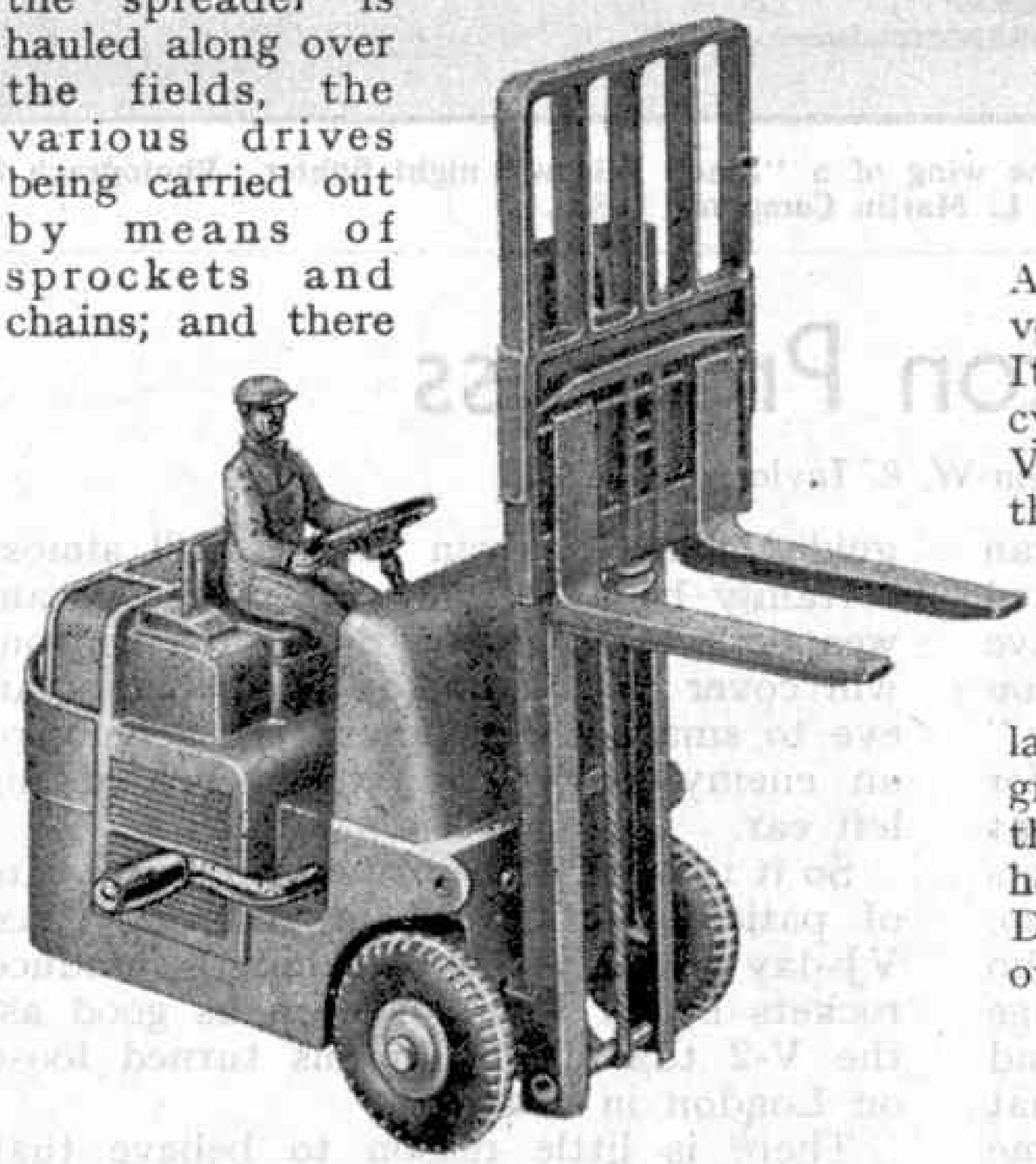
Next we come to the Massey-Harris Manure Spreader, Dinky Toys No. 27c, an attractive miniature of an agricultural implement that has fascinating movements. Those who have the splendid Massey-Harris Tractor, Dinky Toys No. 27a, naturally look for something to haul with its aid. The Harvest Trailer, Dinky Toys No. 27b, has proved very popular for this purpose. The Manure Spreader introduced this month will prove equally fascinating when



Ford "Fordor" Sedan, Dinky Toys No. 139a.

towed behind the Tractor, and its mechanism will give it added interest.

The original of this fine new model, like the Dinky Toys Tractor, is a Massey-Harris product. Its use saves hours of labour on the farm, while ensuring that the manure used is spread evenly over the fields. The actual spreading is carried out by means of a distributor worm mounted at the rear; and two cylindrical beaters provided with rows of teeth, one fitted above the other, beat out the manure and feed it on to the distributor worm. The distributor worm and the two beaters rotate smartly as the spreader is hauled along over the fields, the various drives being carried out by means of sprockets and chains; and there



Coventry Climax Fork Lift Truck, Dinky Toys No. 14c.

is also a mechanism that carries the manure backward in the body of the vehicle to supply the beaters.

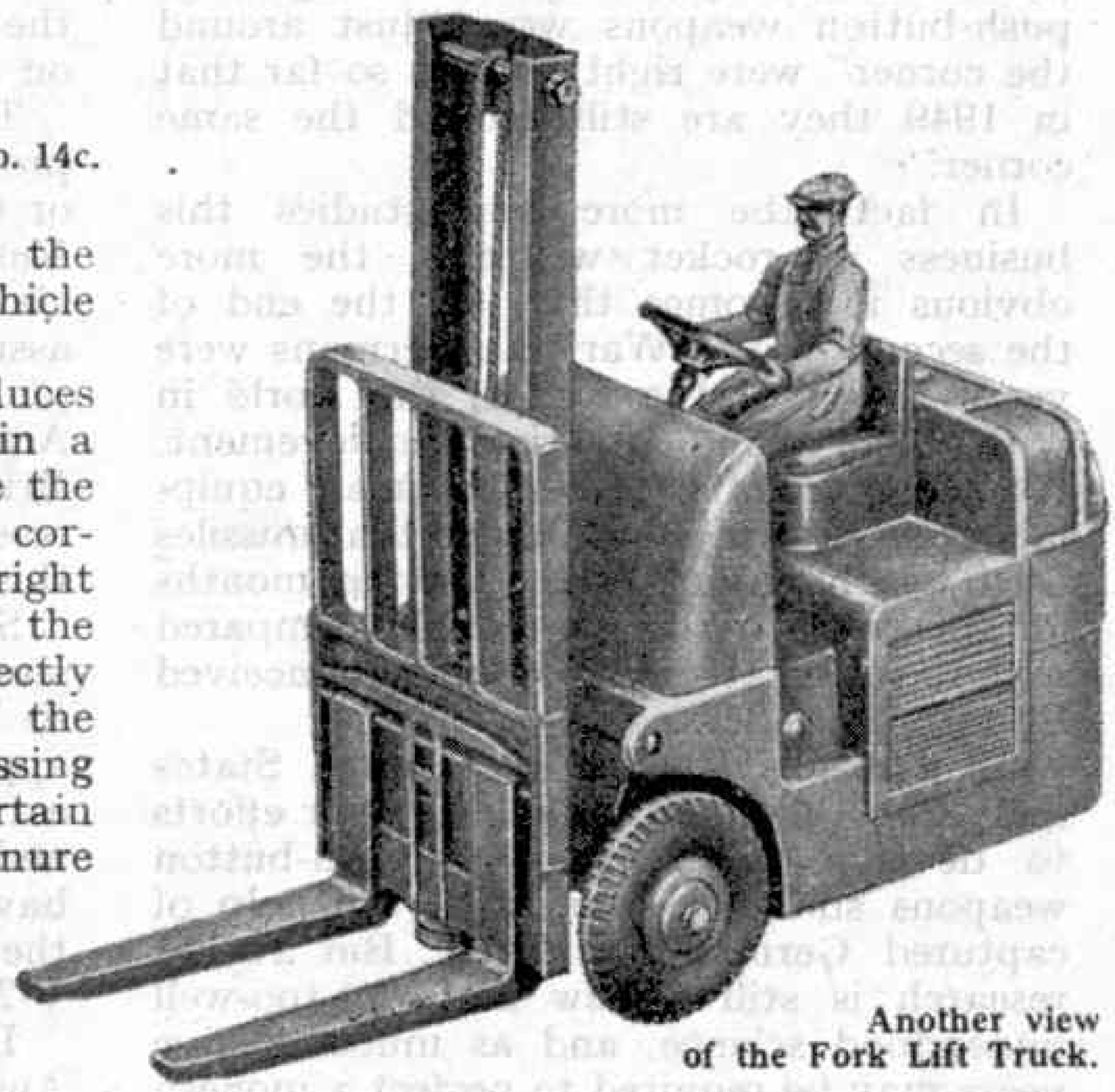
The Dinky Toys miniature reproduces the chief features of the original in a strikingly realistic manner. There are the two beaters, armed with teeth and correctly placed, and behind them, right at the back of the implement, is the distributor worm. All of these are correctly driven from the two road wheels of the vehicle by means of Spring Cord passing over pulley wheels, which gives certain and attractive movement as the Manure Spreader is hauled along behind its Tractor.

The body of the Manure Spreader is handsomely enamelled in red, with yellow wheels, and has the name of the makers on its sides. In front there is a substantial yoke with an eye that engages with the rear hook of the Massey-Harris

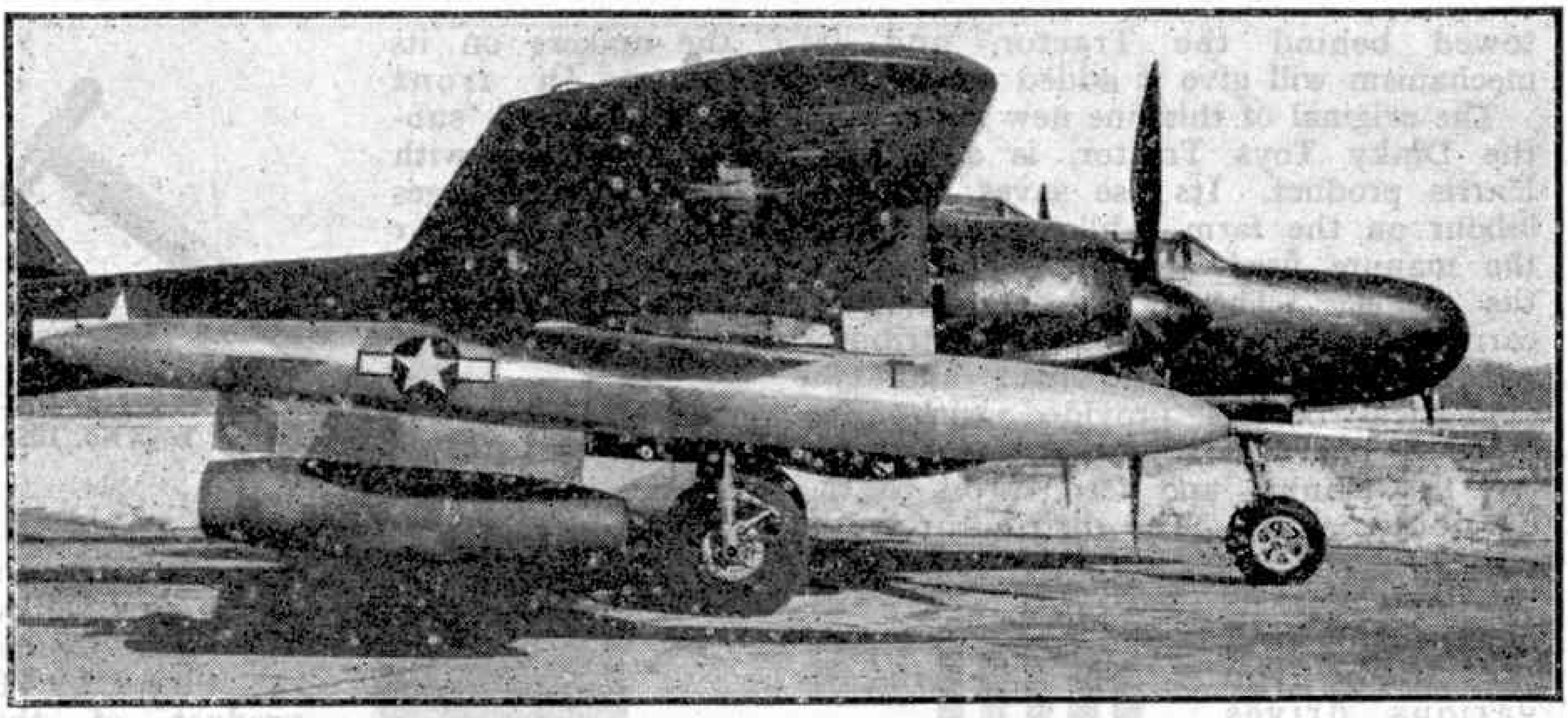
Grass Cutter, Dinky Toys No. 105e.

Tractor.

The car reproduced in our fourth new Dinky Toy this month is the 1949 product of the Ford Motor Company. This American car is a large and handsome vehicle with many outstanding features. Its 100 h.p. engine is v-shaped, with eight cylinders, and is of entirely new design. Various types of body are available and the one chosen for the Dinky Toys miniature is the "Fordor" Sedan, every external feature of which is beautifully reproduced. It has the up-to-date styling characteristic of many of the latest motor cars, with the now familiar grille set low in the front. In the model this is finished in correct tone, as are the heavy front and rear bumpers. Every Dinky Toy enthusiast will be delighted to own this outstanding miniature.



Another view of the Fork Lift Truck.



"Gorgon" missile in launching position, under the wing of a "Black Widow" night fighter. Photograph by courtesy of Glenn L. Martin Company, U.S.A.

Push-Button Progress

By John W. R. Taylor

IT was, I think, Cy Caldwell, the veteran American aviation writer, who remarked recently that "The U.S. Air Force have made great progress with push-button weapons. They've got the push-button."

Perhaps that was a little unkind, for American scientists have made great advances in the development of rockets and guided missiles in the last year or so. But the fact remains that experts who predicted three years ago that long-range push-button weapons were "just around the corner" were right only in so far that in 1949 they are still around the same corner.

In fact, the more one studies this business of rocket weapons, the more obvious it becomes that, by the end of the second World War, the Germans were years ahead of the rest of the world in both theory and practical achievement. Examination of captured German equipment and drawings has proved that missiles used by the Allies in the closing months of the war were amateurish compared with the efficient, deadly weapons conceived by our late enemies.

As a result, Britain, the United States and Russia have all redoubled their efforts to develop new forms of push-button weapons since the war, with the help of captured German scientists. But rocket research is still a new and not-too-well understood science, and as much as five years may be required to perfect a modern guided missile. Even then it will almost certainly be a long way from the dream weapon which, at the push of a button, will cover 5,000 miles in the wink of an eye to smack the commanding general of an enemy army two inches behind his left ear.

So it is hardly surprising that four years of patient hard work in America since VJ-day are only now beginning to produce rockets better than, or even as good as, the V-2 that the Germans turned loose on London in 1944.

There is little reason to believe that progress has been more rapid in Britain or the Soviet Union, although neither the Russians nor ourselves have said much about our latest developments. It can be assumed, however, that with the Ministry of Supply, and companies like Fairey, Armstrong Whitworth, de Havilland and Bristol, all actively engaged on weapon research, Britain is among the leaders in this branch of aeronautics.

Similarly, Norwegian airline pilots have seen and timed moving objects believed to be Russian rocket missiles, which appeared to follow the curvature of the earth instead of climbing to a great height and then falling like V-2. If the Russians have produced a missile which can do this, they will have solved the problem of V-2's short range.

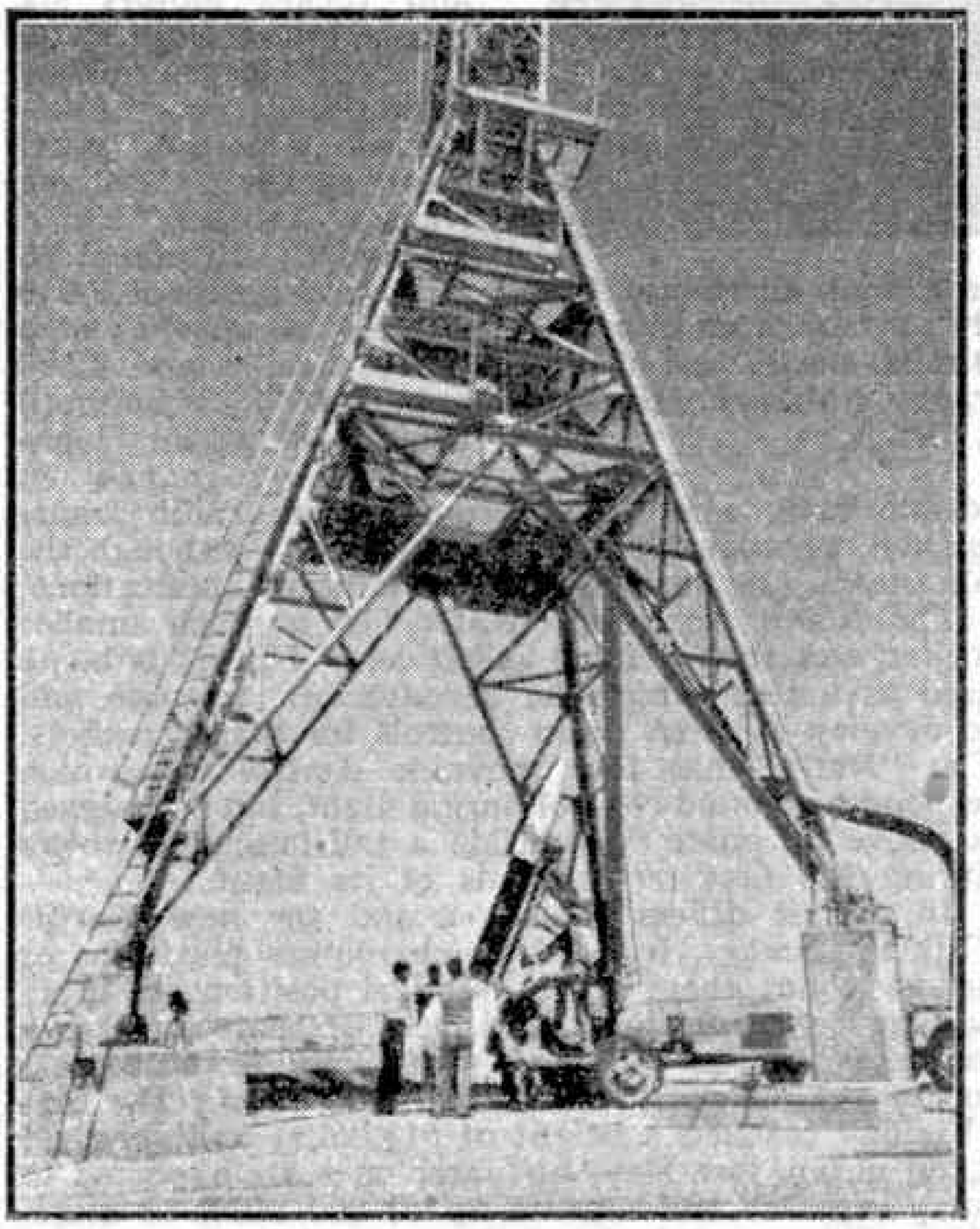
Dark horse in rocket development is Australia, which has the world's finest

testing range at Woomera. Few details of experiments carried out on this South Australian Rocket Range have yet been released officially, but the Australian air journal *"Wings"* claimed recently that "Over the past few months Australia has been carrying out extensive tests with guided missiles and other long range weapons." It continued: "Many new types still on the top secret list have been developed, including rocket bombs designed to carry automatic warheads, jet-propelled, radio-controlled flying wing bombs, homing bombs that follow a moving target such as a submarine, revolutionary faster-than-sound aircraft and an anti-tank weapon that is capable of destroying the largest tank."

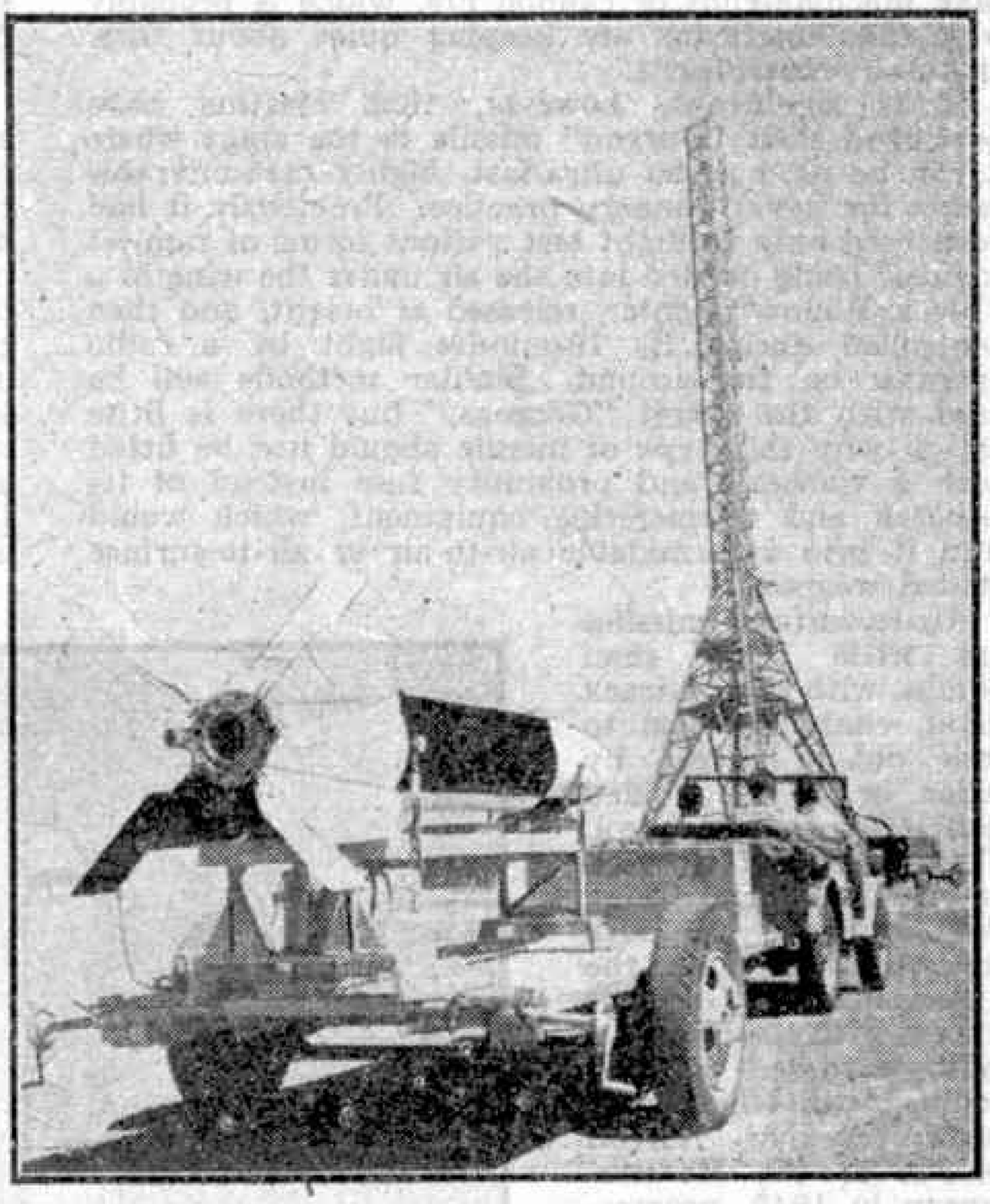
All of which sounds most impressive, and may mean that Australia, with the co-operation of the British Ministry of Supply and the Research Division of Fairey Clyde, is quietly setting the pace in push-button research.

Meanwhile, the only experiments that can be discussed in detail are those which have been announced by the U.S. Air Force and Navy. These fall into four categories—air-to-air, air-to-surface, surface-to-air and surface-to-surface missiles.

Air-to-air missiles are the smallest and simplest type, and it is probable that



The "Nativ" guided missile being raised into position in the launching tower.



"Nativ," a North American Aviation guided missile, on its way to the launching tower from which it will be test fired. The illustrations on this page are by courtesy of North American Aviation, Inc., U.S.A.

efficient ones are already in existence. The idea is not new, as the R.F.C. fitted Le Prieur rockets to some of its fighters in the 1914–18 War, for use against German aircraft and balloons. They looked like big 5th November rockets, and achieved little beyond poking a lot of holes in the skies over France. The Germans had rather more success when they revived air-to-air rockets in attacks on American "Fortress" formations in 1943, and by the end of the war they had developed a much more deadly weapon—the X–4—which could be guided to its target by a fighter pilot, by means of two control wires which streamed back from bobbins at the tips of its stubby wings.

The Americans presumably have picked up where the Germans left off, the problem being to pack a motor, controls, warhead, fuse and radar into a small airframe that can be carried under the wing of a fast interceptor fighter. When that problem is solved, the U.S.A.F. will have a defensive weapon of tremendous power, able to chase enemy bombers at supersonic speed, track them down and then blow them to pieces. Alternatively, American atom-bombers could use such missiles for defence against fighter interception. For either purpose they would be incomparably better

than machine-guns or cannon fire, which is probably why the Americans are keeping quiet about their air-to-air experiments.

It is significant, however, that Martins have developed their "Gorgon" missile to the stage where it can be used as an ultra-fast, highly-manœuvrable target for naval gunnery practice. Previously it had been used only to flight test various forms of ram-jet engines, being carried into the air under the wing of a "Black Widow" fighter, released at height, and then controlled during its 10-minute flight by a radio operator on the ground. Similar methods will be used with the target "Gorgons," but there is little reason why this type of missile should not be fitted with a warhead and proximity fuse instead of its research and telemetering equipment, which would turn it into a formidable air-to-air or air-to-surface guided weapon.

Air-to-surface missiles are little more than bombs with a one-track mind, enabling them to seek out a target by radar or to be guided into it by radio control. They were, in fact, used in primitive form during the last war by both the Germans and the Americans. The Germans started with the Henschel radio-controlled glider-bombs, with which they sank several Allied vessels in the Mediterranean in 1943, progressing later to the FX-1400 radio-controlled, armour-piercing rocket bomb.

American development has followed similar lines. The "Azon" 2,000 lb. bomb, which could be steered laterally by radio during its fall, was followed by the "Razon," which could also be controlled in a fore-and-aft direction, and then by "Felix," which had in addition a heat-sensitive homing nose, causing it to change course automatically in the direction of anything hot, such as a ship's funnel or a factory chimney.

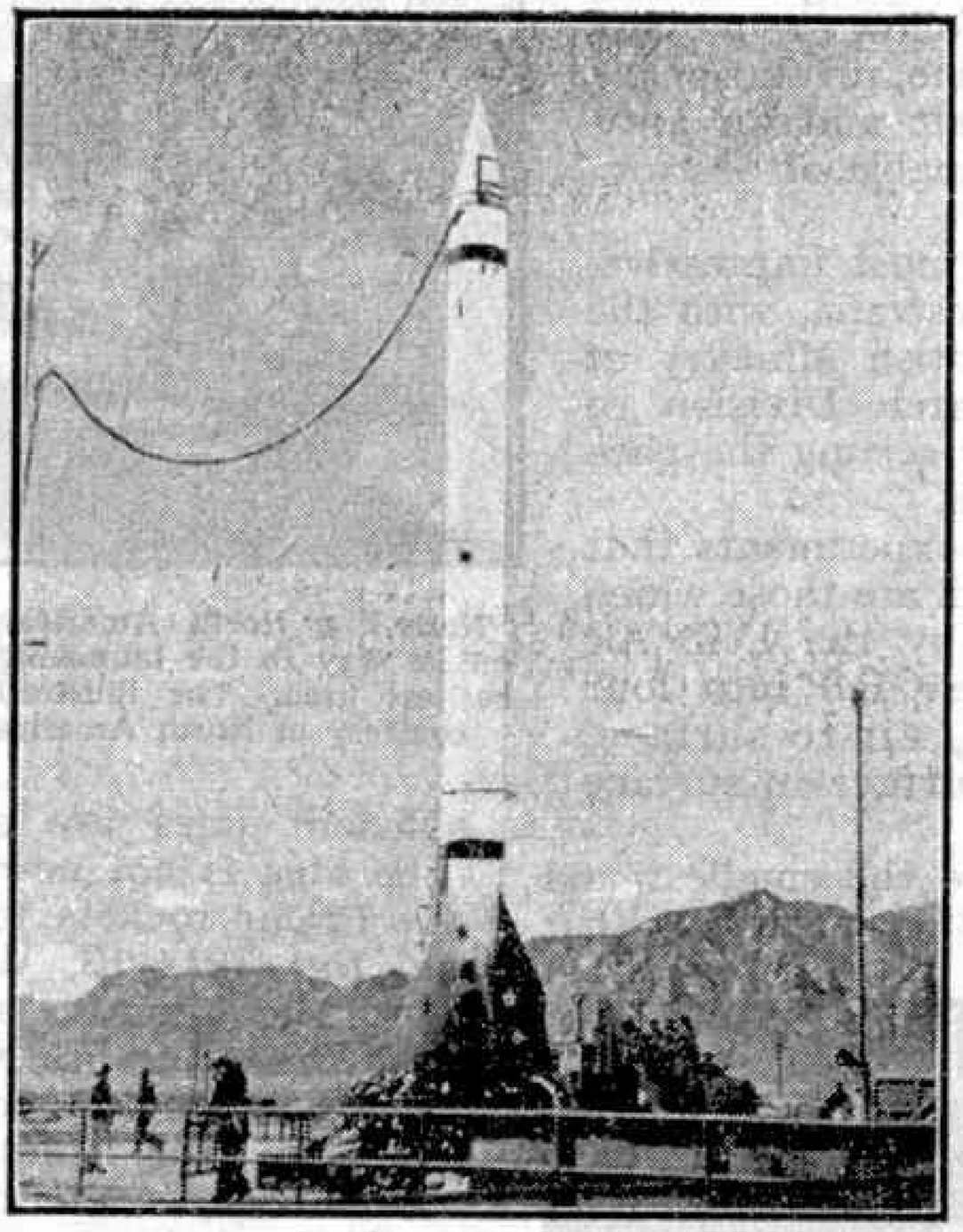
The U.S. Navy's "Bat" had the same pleasant little homing habits as "Felix," but did not need to have the home fires burning as it could chase by radar echo anything that got in its way. In fact, one chased and rammed a Japanese destroyer at a range of 15 miles from its mother-plane. As a point of interest, the "Bat" took 8,760,000 man-hours to perfect for operational use!

That is as far as we may take the air-to-surface story at the moment, but a combined "Bat-Gorgon" is an obvious naval development, while the U.S.A.F. is said to be building a series of radar-controlled, free-falling bombs up to a weight of 20 tons each.

Surface-to-air guided missiles were born of necessity in the last war, by the Germans who had to find a way of stopping the overwhelming Allied Combined Bomber Offensive, and by the Allies who needed an answer to the Jap suicide bomber. None of them progressed far by VJ-Day. German missiles such as the "Rheintochter" and "Schmetterling" were intended to use the Rheinland system of control, which employs two radar beams, one focussed on the rocket, the other on the target. The idea was to bring both beams together at the target and simply fly the rocket down one beam. The U.S. Navy's "Little Joe" probably used a much simpler radio directional control like that of the "Azon."

Unfortunately, such simple controls are not really efficient enough for anti-aircraft work, even when combined with a proximity fuse, which explodes the warhead as soon as a target is within a predetermined range of the missile. Consequently, an improved two-beam system like the Rheinland may be essential before ground-to-air missiles can become practical defence weapons. On the other hand, it is quite likely that the best answer to high-flying jet-propelled atom-bombers will be tiny *piloted* rocket interceptors like the German "Natter," carrying a battery of small rocket missiles in their nose. In fact, as there seems to be no defence at all against missiles like V-2, unless a means of detonating the warhead at a height of several thousand feet above the ground can be devised, piloted rocket-fighters may well prove a much better proposition than guided anti-aircraft missiles for a long time to come.

Surface-to-surface rockets are, of course, the ultimate developments in push-button research, for a super-V.2 carrying an atomic warhead and able to hit accurately any target within a range of 5,000 miles could create unimaginable destruction. Fortunately, there is little prospect of such weapons being developed for many years, for they will need electronic devices able to ensure accuracy greater than that of the finest scientific measuring instruments, and rocket motors six times more powerful than the biggest railway locomotives.



With the gantry removed after a final check-up, the Martin "Viking" rocket is ready for launching into the upper atmosphere. It landed 10 miles north-west of the firing point. Official photograph, National Military Establishment, U.S.A.

First American post-war rocket was the Navy's "Aerobee," which reached an altitude of 78 miles and speed of 3,000 m.p.h., compared with the 114 miles and 3,500 m.p.h. of V-2. It has been used chiefly for high-altitude research in cosmic rays, atmospheric composition, radio transmission, photography and spectroscopy, although the Americans are not blind to its military applications.

The North American "Nativ," is a much smaller rocket, less than a third as big as a V-2. It is being used as a test vehicle for aerodynamic research and to develop efficient radio controls for bigger rockets. The "Nativ" has four movable control fins which respond to ground control during flight, but is designed to move on guide rails inside a tall launching tower during the first few seconds of its flight.

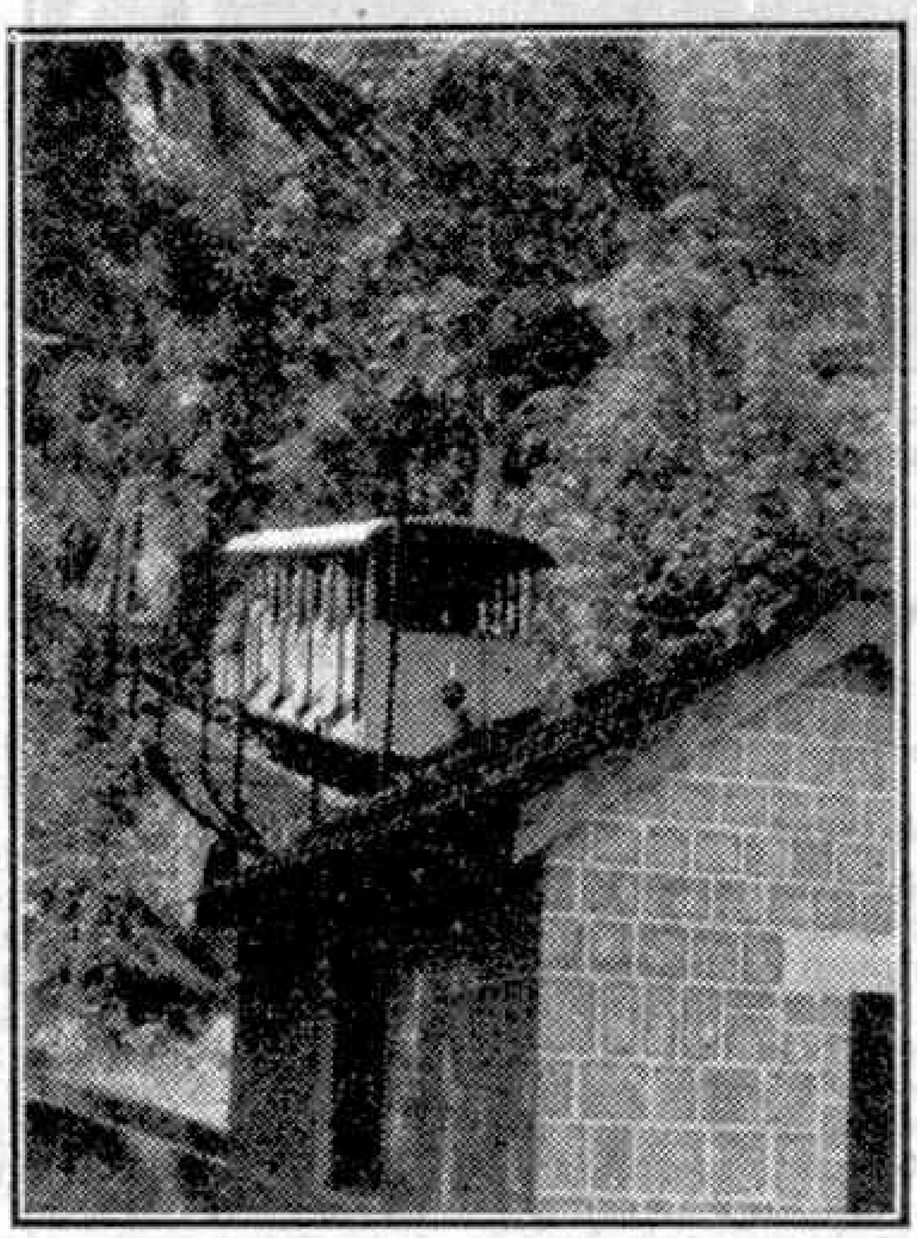
In this it differs from V-2 and the new Martin "Viking" rocket, both of which require platforms or hoists to put them into a vertical position for firing and for servicing, but stand clear of these structures for take-off. The "Viking," 45 ft. long, is the biggest rocket yet developed in the United States. The first "Viking" reached a height of 51½ miles and speed of 2,250 m.p.h. last May, but later ones are expected to carry research instruments up to 200 miles or more. No radio control is fitted, but the U.S. Navy claim that controls exist which could convert the "Viking" into an accurate guided missile.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

THE PENANG HILLS RAILWAY

One of the most interesting railways in the world is to be found on the island of Penang. This island, measuring 111 square miles in area, lies a mile west of the mainland of Malaya, and the hills which overlook the capital, George Town, are reached by the "Penang Hills Railway," which incidentally is the only railway on the island. It is of the funicular type, and extends to a height of some 2,500 ft. The track itself is built in two separate sections, and passengers have to change coaches half-way in order to complete the journey. It is single track except for two short sections where loop lines have been built to enable the carriages to pass each other. The carriages are quite small, about half the length of the type used on British railways, and they seat about 30 passengers, although this number is greatly exceeded at times, when hordes of natives swarm on to the train. The actual journey takes about 25 min., as the going is extremely steep, the gradient being sometimes 1 in 1.96, and the speed never exceeds four miles an hour.



The funicular railway on Penang Hill. Photograph by courtesy of the Malayan Information Agency.

As the small cable-drawn carriage slowly ascends, the view becomes positively breath taking. Penang is known as the "Gem of the East," and on looking down on it from the train one must agree that the name is fully justified. Spread out below, among the hills and plains, are acres and acres of coconut trees, while here and there show the roofs of the numerous Government and private residences, where it is possible to escape from the torrid heat down at sea level. On reaching the summit the whole island takes on a symphony of colour, with its red roofs and yellow stucco walls, and the ever present green of the jungle. It is possible also to see the mainland of Malaya stretching away into the distance while far below can be seen George Town.

S. A. Bennett (Birmingham).

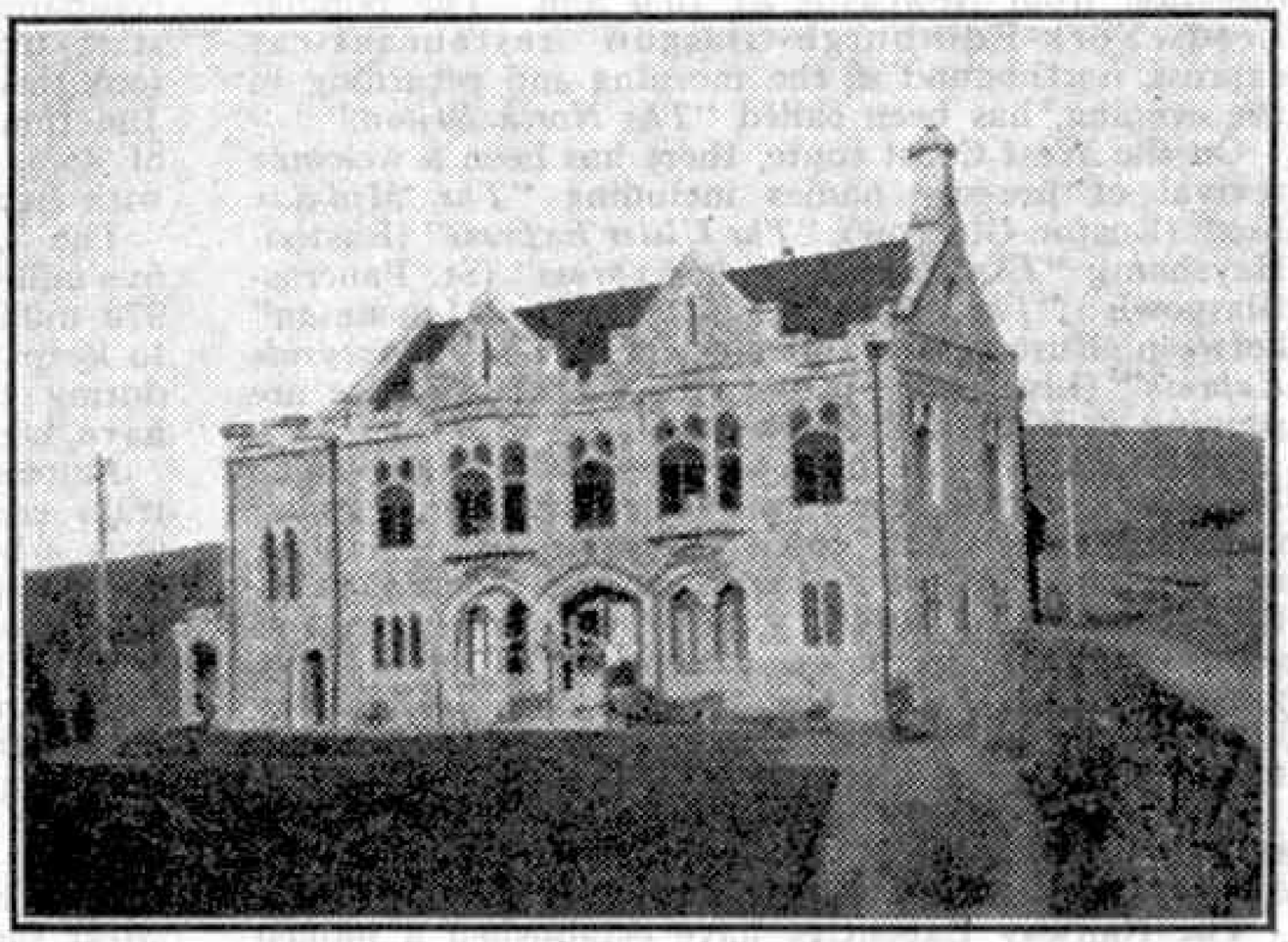
SIGN OF THE TAKAHE

Christchurch, the capital city of Canterbury, New Zealand, is separated from its port, Lyttelton, by a range of hills known as the Port Hills. A fine road crosses the hills and a tunnel provides a route for an electric railway. A tunnel road is shortly to be built. A tram runs from the city, up through the popular hillside suburb of Cashmere to the "Sign of the Takahe" high above the roofs of the city. This is a fine stone building erected in 1926 by a well-known Canterbury resident. It, and its companion the "Sign of the Kiwi" on the hill crest, were to be the first of half-a-dozen such buildings on the hills, catering for hikers and visitors. The "Takahe," with its coloured shields, stained glass windows, and relics of early Canterbury, was a great pre-war attraction. During the war years both buildings deteriorated badly and had to be closed. Recently, after extensive repairs, the "Takahe" re-opened its doors. Once more people can wander through the rooms, admiring the fine stone tracery and carving, the beautiful stained glass windows, the paintings and heraldry, and best of all, the marvellous woodwork.

From the "Takahe" it is 2¼ miles up the Summit Road to the hill crest and the "Sign of the Kiwi." This building has not yet been re-opened, but from it a beautiful view can be obtained of the blue water of Lyttelton Harbour and the Bays.

The Summit Road crosses the Bridle Path, the track used by the Canterbury Pilgrims when they arrived from England in the "first four ships" in 1850 and founded the city of Christchurch. The Bridle Path is marked by a stone memorial building bearing the words, *"They Passed This Way."*

R. J. Anderson (Christchurch, N.Z.).



"The Sign of the Takahe," in which are many relics of the pioneer days of Canterbury, New Zealand. Photograph by R. J. Anderson, Christchurch, N.Z.

A Southern express near Basingstoke headed by a 4-6-2 No. 21C 152 "Lord Dowding." Photography by E. C. Ive, Reading.

Railway Notes

By R. A. H. Weight

National and Scottish News

The winter time tables now in force provide for passenger trains covering nearly four million miles per week. There are still restricted coal supplies, and maintenance difficulties, but it has been possible to schedule more main line services than last winter. These include some over useful cross-country routes, with certain accelerations and re-timings in order to give better connections. About 700 buffet or restaurant car trains are running on each ordinary weekday, while facilities for reserving seats have again been extended and more cheap day or similar bookings introduced, often available by ordinary trains. Millions of passengers have already taken advantage this year of travelling at excursion or reduced fare rates.

A new named express is "*The Northumbrian*," leaving King's Cross at 12.20 p.m. for York and Newcastle, with a corresponding train in the opposite direction from Newcastle at 10.0 a.m. The popular Leeds-York-Edinburgh-Glasgow restaurant-car express, northbound in the morning and returning in the evening, has been called "*The North Briton*."

On the West Coast route, there has been a welcome revival of pre-war names including "*The Mid-day Scot*" (Euston-Glasgow); "*The Ulster Express*" (Euston-Heysham); "*The Thames-Clyde Express*" (St. Pancras-Glasgow); "*The Comet*" and "*The Mancunian*" between Euston and Manchester; "*The Merseyside Express*" (Liverpool-Euston). In each case these are running in both directions.

Many stations are in need of modernization; some 150 are scheduled for improvement and smartening up during the next three years or so, providing sufficient labour and materials can be secured. Since the beginning of 1948, some 2,000 passenger and goods stations have been repainted. More new passenger coaches of the latest types are coming into service, but it will be necessary for some time to use many of the older ones.

Several new steamships for railway-operated routes to the Continent and the Isle of Wight are under construction.

The Railway Executive have established a unified staff suggestions scheme with the object of encouraging co-operation in progress and development. Awards will be made, as had been done in the past by separate railways or regions, to those submitting suggestions regarded as being of greatest merit or use.

Two further "A2" 4–6–2s transferred to the Scottish Region are: No. 60525, "*A. H. Peppercorn*," No. 60531 "*Bahram*." An additional "B1" 4–6–0 at Kittybrewster, No. 61350, commences a fresh series under construction at Darlington.

London Midland Region.

We have received advice of new locomotives placed in service as follows: 4–6–0 class "5" mixed traffic, No. 44667, allocated to 17A, Derby; 2–6–2T, class "2," Nos. 41230–7, 5A, Crewe North; and No. 41238, 2D, Nuneaton; class "4" 2–6–4T: Nos. 42117–20, 5D, Stoke-on-Trent; 2–6–0, class "4" mixed traffic: No. 43040, 16A, Nottingham; Nos. 43041–2, 19A, Sheffield; 0–6–0 diesel-electric shunter: No. 12056, 18A, Toton.

Thirty-nine 2–8–0 engines have been acquired from the Ministry of Supply, including ten formerly in L.M.S. stock. The remainder were built to L.M.S. design by private firms for war service.

A lively run was recently reported over the picturesque North Peak line of the Midland Division from Chinley to Dore and Totley, thence into Sheffield, behind class "5" 4–6–0 No. 44986, fitted with coal weighing apparatus on the tender used for checking fuel consumption. A description of the tender in question appears on page 431 of this issue.

No. 44764 of the same class, fitted with a similar tender, has been on a special series of dynamometer car tests between Derby and Willesden with the L.M.R. Mobile Testing Units.

An extremely creditable performance was logged by Mr. N. Harvey when travelling from Rugby behind 4–6–0, No. 45741 "*Leinster*," hauling a 12-coach Birmingham-Euston semi-fast train. Time was gained on each stage between stops at Northampton and Watford although bookings in places are smart. The rise up to Tring was compassed at a minimum of 67 m.p.h., followed by a maximum of 76 before King's Langley, so the 48½ miles start to stop from Northampton to Watford were covered in 52¾ min. compared with the 55 allowed. A very smart re-start from Watford and a maximum of 80 m.p.h. took this comparatively heavy train through Willesden Junction, 12 miles, in 13 min.—decidedly reminiscent of some of the very fast runs of 1939 or earlier with lighter loads.

The London Midland Region annually consumes five million tons of coal, 290 million units of electricity, 970 million cub. ft. of gas. It is necessary therefore to keep the "Fuel economy" slogans well to the fore during the winter months. Some of these slogans have been suggested by members of the staff.

Among the 801,000 parcels or similar passenger train consignments handled at Euston in a month were a box of bees (some of which escaped, inflicting stings), a crate of live monkeys, a wolf, a leopard, a box of snakes and several live deer.

Weed-killing trains, travelling slowly and equipped with tank wagons from which solution is sprayed on to the tracks, have been running round again this autumn.

Southern Tidings

New light "Pacific" No. 34091, the first of the latest series built at Brighton, is painted dark green with orange and black lining, having British Railways crest on the tender. Its name, "*Weymouth*," suggests a return to "West Country" titles. Several other

engines of this type as well as a few "Lord Nelsons" and "King Arthurs" are appearing in the same green finish.

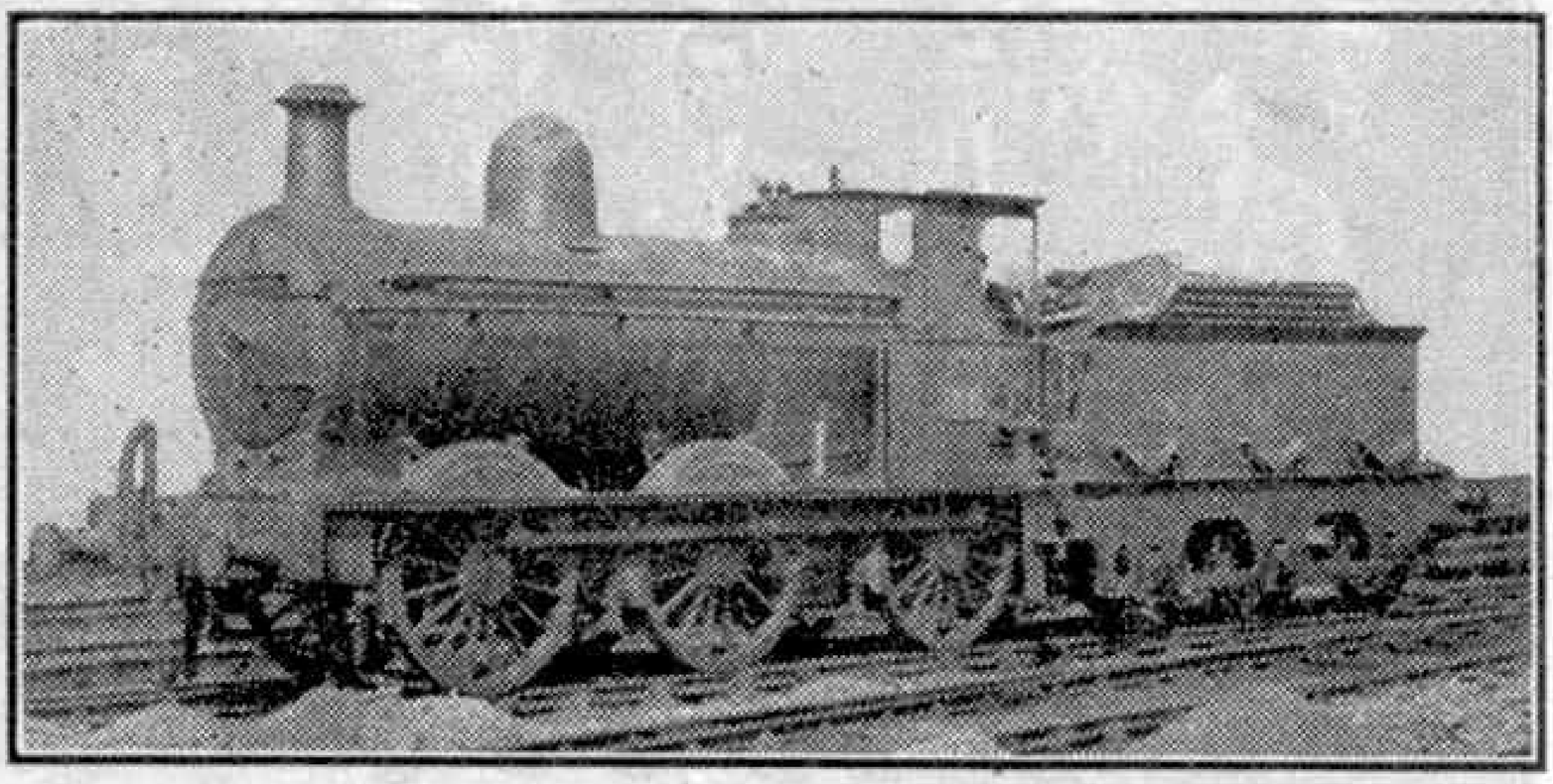
Lined black passenger or mixed traffic tender and tank engines are numerous. Many, however, carry no crest or lettering. The numbers, etc., now appear in white lettering of Gill Sans style, as a rule, when engines leave Works repainted.

During recent travels about the system, the writer sampled many kinds of train, travelling at speeds up to 70 m.p.h. in main line electrics and 75 m.p.h. by steam. A remarkable contrast from a 12-coach, restaurant-car, fast electric from Waterloo was the one-coach Hayling Island branch train hauled by the one engine in steam there for the day. This was "Terrier" 0-6-0T, No. 2655, built in 1875. There are few signalling or similar formalities on that single line. This crosses an arm of the sea by a low bridge on which weight limits are so strict that only "Terriers" are allowed. At busy holiday times two are used together sometimes on trains of more than five coaches.

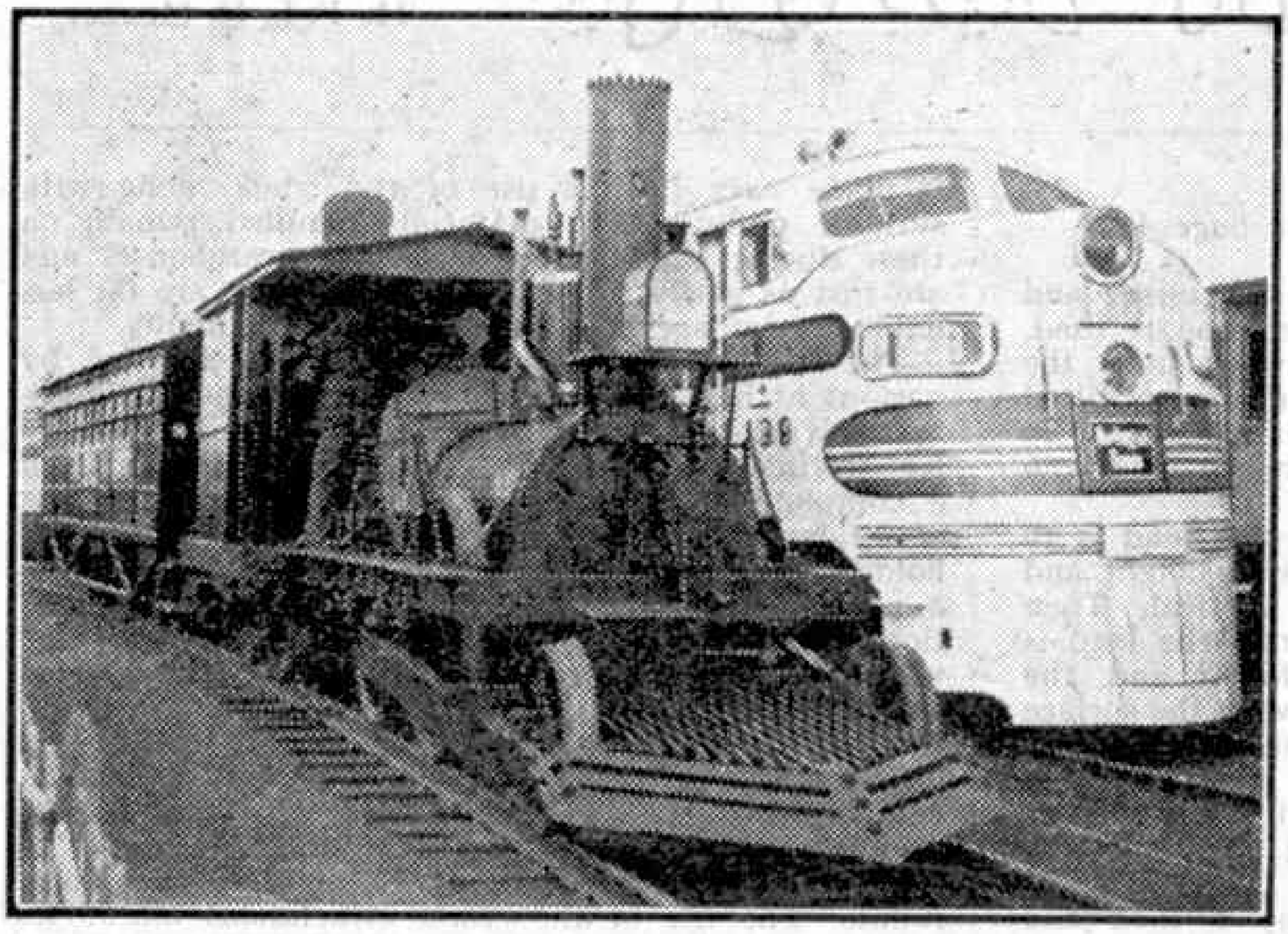
Many other journeys were made behind Wainwright "H" 0-4-4Ts in Kent or E. Sussex where they share semi-main line work. No. 31306, built in 1906, running bunker foremost, touched 57 m.p.h. downhill and 50 on the level, with a four-coach Hastings-Ashford train. A "King Arthur" No. 770, "*Sir Prianius*," made an unusual sight running tender first on the Ashford-Maidstone local. Class "Q1" and "C" 0-6-0s were seen on coastal or other passenger trains from Tonbridge in the summer. The "Q" type were common on similar Central Section duties, on which "C2x" 0-6-0s also appeared on occasion.

A L.B.S.C. "E4" 0-6-2T, No. 32518, built in 1901, did well to lose only 2 min. with the 330-ton Hastings-Birmingham through train, between St. Leonards and Eastbourne, where a "K" class "Mogul" or 2-6-0 took over. A Redhill "B4x" 4-4-0 was seen arriving at Brighton on this train in the opposite direction. Few of these engines are now working and they seldom run over the Brighton main line.

Stirling 0-6-0, lettered "E.K.R.No.2" (East Kent Railway, now an S.R. goods traffic local line), lately arrived at Ashford Works. Her S.R. number was formerly 1383.



Engine No. 31, a veteran 0-6-0 of the former N.C.C. at Belfast. It was originally built in 1878 and when photographed was still in use for dockside shunting work. Photograph by E. M. Patterson, St. Andrews.



"John Bull," the oldest locomotive in the U.S.A. preserved complete, alongside a modern diesel electric of the Burlington Route at the 1949 Chicago Railroad Exhibition. Photograph by C. E. Keevil, Chicago.

Western Region Locomotive Notes

Completing the latest series of "Castles," Nos. 7025-7 have been placed in service named respectively: "*Sudeley Castle*," "*Tenby Castle*," "*Thornbury Castle*." The first-named is allocated to Old Oak Common (PDN). New-type 0-6-0Ts having outside cylinders and motion are coming into service from Swindon numbered 1503 upward, while pannier tank construction is proceeding by contract; Nos. 8400-1 built by W. G. Bagnall Ltd., Stafford, are in service, and No. 8450 constructed by the Yorkshire Engine Co. Ltd.

No. 6019, "*King Henry V*" is now in the blue livery with black and white lining. A diesel-electric shunting engine was lately reported nearly completed.

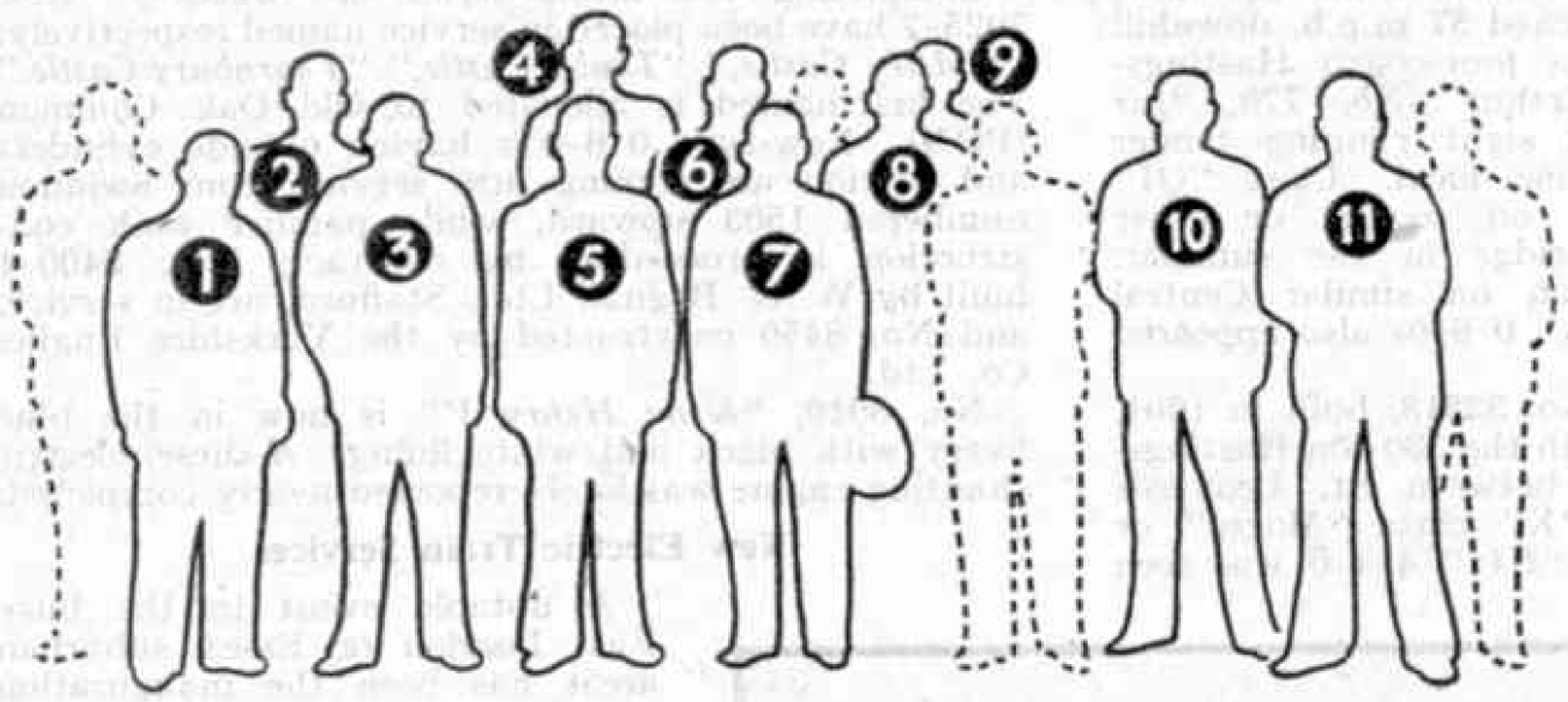
New Electric Train Services

A notable event in the busy East London or Essex suburban areas has been the inauguration of electric train services with overhead traction between Liverpool Street and Ilford, Romford and Shenfield along the old G.E. main line of the Eastern Region where local services have long been liable to overcrowding. During November it is hoped to establish full electric working as far out as Shenfield with frequent, regular-interval trains.

Eastern and North Eastern Regions

Two more "A1" 4-6-2s with roller-bearing axleboxes, Nos. 60154-5, were ready at Doncaster by the end of September, No. 60153 being then stationed at York. Several "A2" 4-6-2s of the various series were recently undergoing general overhaul so their appearance in dark green paint will probably be more general by the time these notes are published. It may also be that more passenger tank engines will by then be running in black with lining instead of the plain black of recent times.

On Monday morning 22nd August, ten members of the New Zealand Cricket Team, with their Manager, Mr. J. H. Phillipps, paid a very welcome visit to the Meccano Works before going to the Aigburth (Liverpool) ground to continue their game against Lancashire. The picture was taken as the team were leaving the Works. The numbered figures below will enable readers to identify the players.



1. F. B. Smith
2. G. O. Rabone
3. B. Sutcliffe
4. V. J. Scott
5. W. M. Wallace (Vice Captain)
6. J. Reid
7. J. H. Phillipps (Manager)
8. J. A. Cowie
9. G. F. Cresswell
10. C. Burke
11. F. L. H. Mooney

The Fork-Lift Truck—(*Continued from page 417*)

friction with the ground, or between the upper and lower inside surfaces of a pallet when one is used. The truck is next driven slowly forward until the load touches the carriage backrest, the mast is tilted backward, and the carriage is raised sufficiently to lift the load clear of the floor so that it can be driven to the desired place.

On approaching the position where the load is to be deposited this is raised to the desired height and the mast is tilted forward until it is vertical. Then the truck is driven slowly forward until the load is exactly over the position intended for it and the forks are lowered until it is in contact with the surface on which it is to rest. On lowering the forks a little further they are relieved of the load and can easily be withdrawn, after which the truck is backed away and turned round, ready for speeding away to fetch another load.

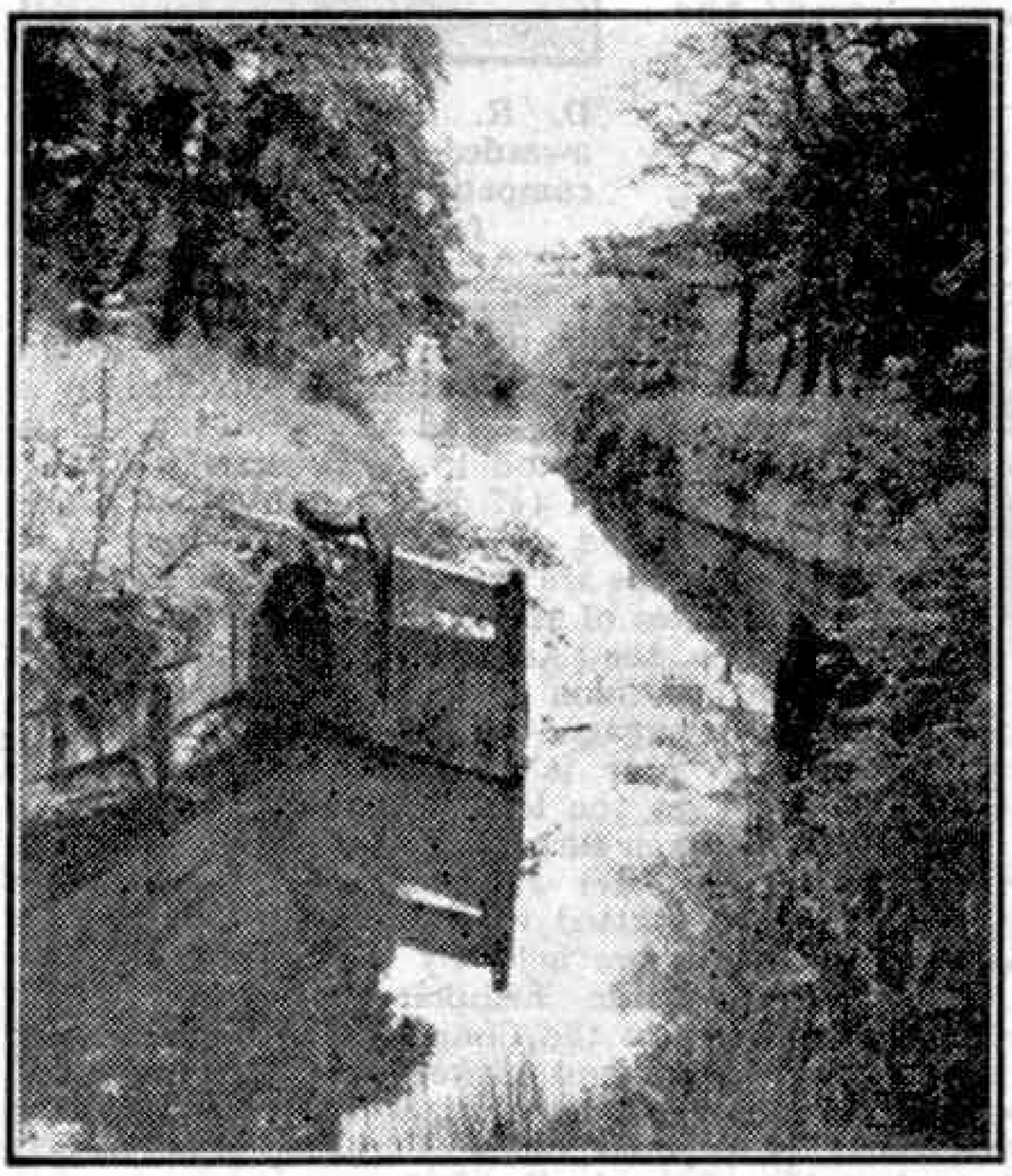
The whole operation of picking up a load and transporting it, and placing it where it is wanted, takes only a few seconds, even when the load has to be lifted well above the ground. Stacking in particular is made easy by the use of the truck along with suitable pallets. The materials handled remain on these during their stay in stores or warehouses and are just as easily lifted down, while they are far less liable to damage than when handled manually.

The uses of the fork truck can be extended by various fittings, including a standard crane, a shovel, a revolving scoop and a ram. It can also be used for towing purposes and altogether it is in itself a complete handling system. It is mobile and can easily be taken to any desired place, including the holds of ships for use in loading or unloading them, a purpose in which it is finding increasing application. The Coventry Climax fork lift truck is provided with lifting eyes so that it can readily be hoisted and lowered into a ship's hold. In conjunction with the use of pallets or battens for storage it is being used in the development of more rapid and convenient systems for loading and discharging that promise to reduce very greatly both the costs of these operations and the time required to turn ships round. The use of the crane attachment allows its employment for moving general packages of many different kinds that cannot be stacked or carried on pallets.

Photography

Toning Gaslight Prints

I OFTEN wonder why so few amateur photographers do any experimenting in regard to the colour of their prints. A gaslight print of good quality is capable of giving a very satisfactory rendering of almost any subject, but this is no reason why colour should not be tried by way of a change and to achieve special effects.



The old lock gate. Photograph by G. Leaf, Hull.

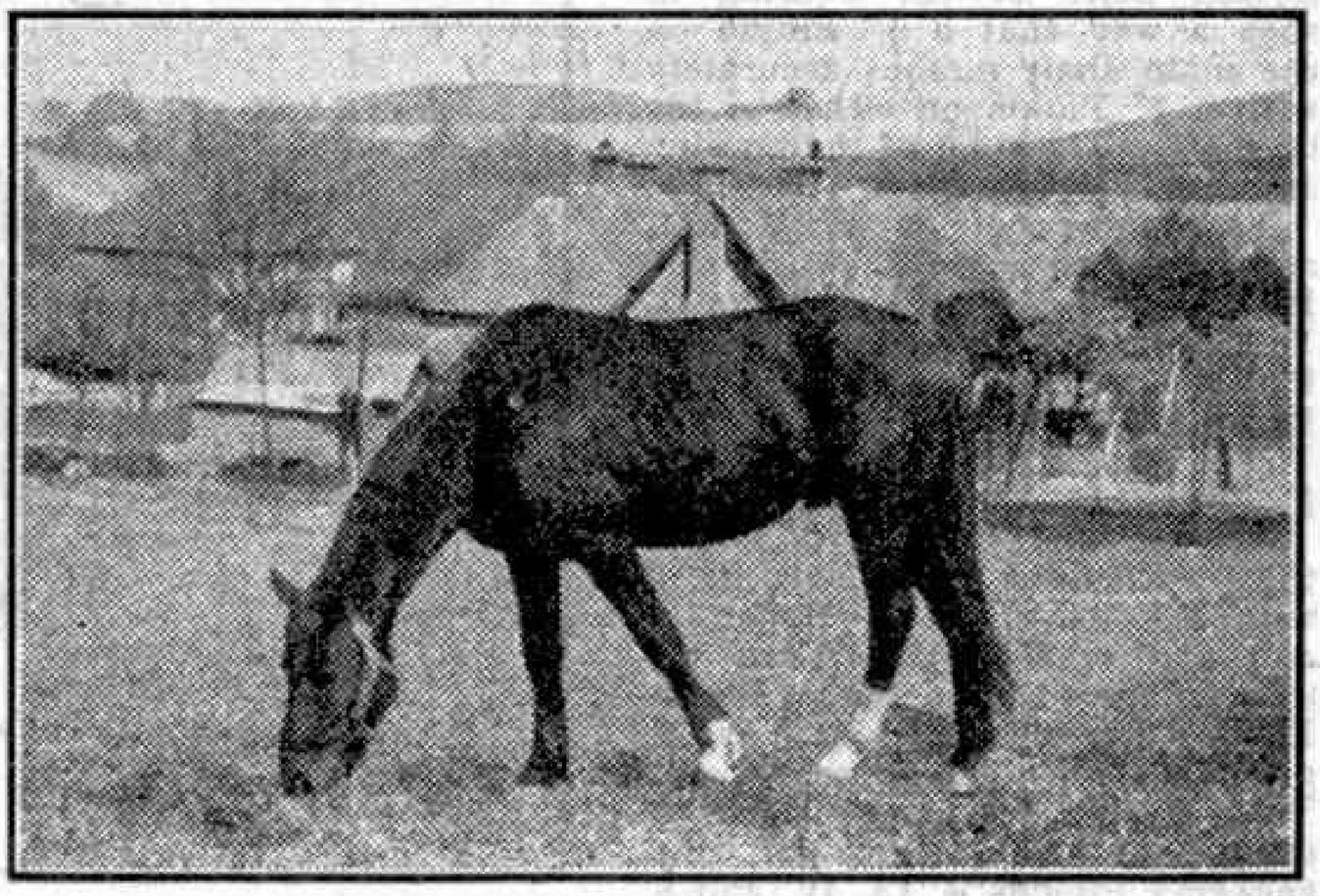
I am not now referring to hand colouring with the brush, which requires special ability and technique, but to such a simple process as toning.

By immersing them in special solutions, gaslight prints can be toned to attractive shades of sepia, blue, or green, with very interesting results. A green tone is excellent for marine studies in general; blue gives a suggestion of coldness to snow scenes and Alpine pictures; and sepia, suggesting warmth of colour, is very suitable for pictures of old buildings of various kinds. I strongly advise readers to experiment with this toning business, and they can do this without difficulty by the use of Johnsons "Pactums," which provide in handy form

Portrait of a Friend, by R. Atkins, Eccles.

the materials for making solutions for copper, blue, green and sepia toning.

Once started on experiments in toning, I suggest that readers should try the Johnson "Colourform" process. The outfit supplied provides the necessary material for producing monochrome prints in a great variety of colours, including intermediate shades. A particularly interesting feature of the process is that the photographer can record the exact proportions of the colourformers required to produce any particular tone; and therefore, by consulting his records, he can reproduce on a later occasion any colour that he wishes.



"Charlie." Photograph by G. R. Brown, Hove.

Among the Model-Builders

By "Spanner"

D. R. Davies, Harrow, was awarded Second Prize in a competition for models built from Outfit No. 4.

THREE-SPEED AND REVERSE GEAR-BOX

The compact gear-box illustrated in Figs. 1 and 2 is designed to provide three forward ratios and a reverse speed, and its small overall size makes it suitable for use in most model vehicles. The gear-box is fitted with a particularly neat selector mechanism that closely follows the operation of the ball and socket gear levers used in actual practice.

The gear-box housing is made from two 3" Flat Girders bolted together through their round holes, and fitted at each edge with a 3" Angle Girder. Two

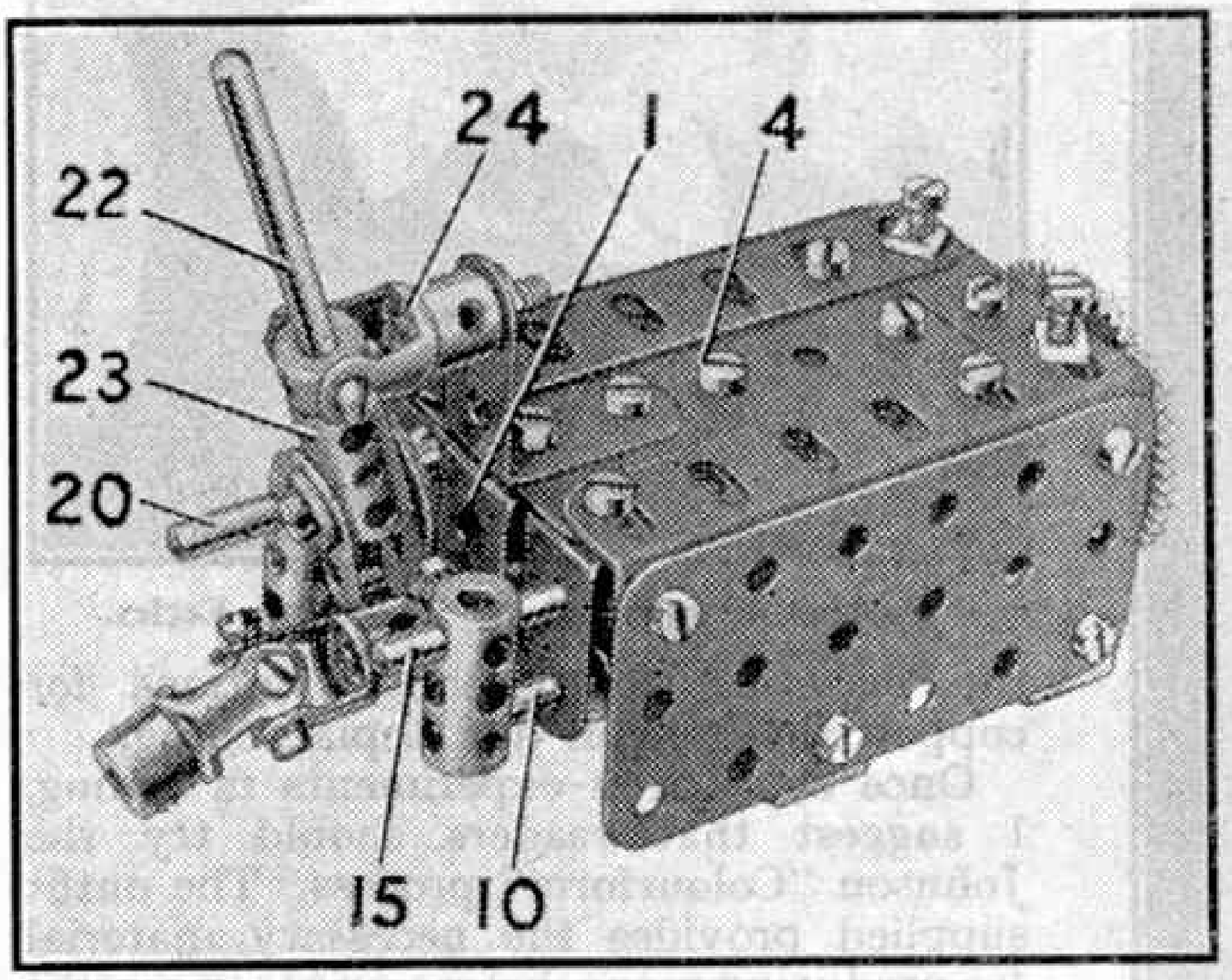


Fig. 1. A compact three-speed and reverse gear-box.

1" × 1" Angle Brackets, one of which is seen at 1, are used for the main shaft bearings, and bearings for the layshafts are provided by the 2½" × 1" Double Angle Strips 2 and 3. The main shaft is also supported at the centre of the housing by a 1" × ½" Angle Bracket held by the bolt 4. A Fishplate bolted to the Angle Bracket is used to locate the shaft in the slotted hole. Double Angle Strips 2 and 3 are fixed to the slotted holes of the housing in such a way that a ½" Pinion on the main shaft meshes accurately with a ¾" Pinion on either of the layshafts. The sides of the housing are 3" × 1½" Flat Plates.

The main shaft is a 2½" Rod and it carries a ½" Pinion 5, a ¾" Pinion 6 and a second ½" Pinion 7. The Rod projects about ⅛" beyond Pinion 7, and partly into a ½" Pinion 8 on the driving shaft. The driving shaft carries also a ¾" Pinion 9.

The layshaft for second and third gears is a 3" Rod 10, fitted with a Collar 11, a ¾" Pinion 12 and a ½" Pinion 13. When the shaft is moved to the right, Fig. 2, Pinion 12 engages Pinions 7 and 8, providing the second gear ratio. Third or top gear is obtained by sliding the shaft to the left, thus engaging Pinions 6, 13, 12, and 8. Movement of the shaft is controlled by a ½" Bolt 14, screwed into a Collar fixed on 4½" Rod 15. Rods 10 and 15 are also connected by a Coupling that is free on Rod 10 but fixed on Rod 15, so that the Bolt 14 is held between the Collar 11 and the Pinion 12 on the layshaft.

The layshaft for the first and the reverse gears is a 3" Rod 16 fitted with a ½" Pinion 17, a Collar 18 and a ¾" Pinion 19. The Rod is controlled by a 4½" Rod 20, connected to its layshaft in a similar way to Rod 15. A reverse Pinion 21 is carried on a 1½" Rod mounted in Angle Brackets fixed to 2" Slotted Strips. The Slotted Strips are attached by Angle Brackets to the sides of the housing, and the slotted holes in the Angle Brackets and Strips allow the Pinion 21 to be positioned so that it can be engaged with both Pinions 19 and 6. Reverse gear is obtained by moving the layshaft to the left, and the drive for first gear is taken through Pinions 5, 19, 17 and 9

The selector mechanism is provided by a Rod 22 fitted with a Coupling 23. Two Fishplates are held by Bolts in the Coupling, and the Fishplates pass over Bolts screwed into the Couplings on Rods 15 and 20. A ball and socket joint is represented by a Swivel Bearing 24 that is fixed to the gear lever, and is pivoted on a Threaded Pin passed through a 1" × 1" Angle Bracket.

The selected gears are held in mesh by the friction of ⅛" Bolts pressing slightly on shafts 15 and 20. Each Bolt is fixed in the housing by two nuts.

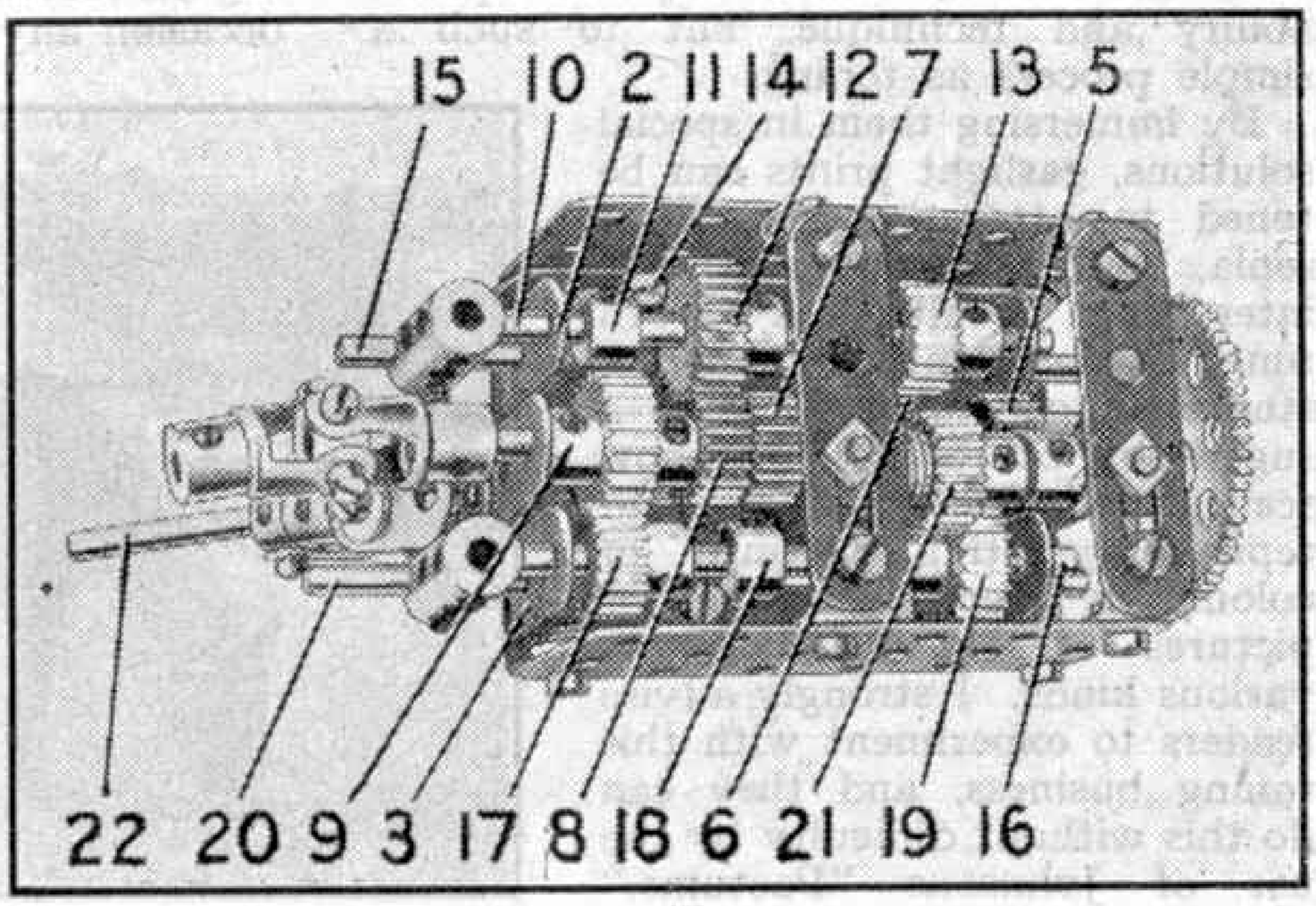
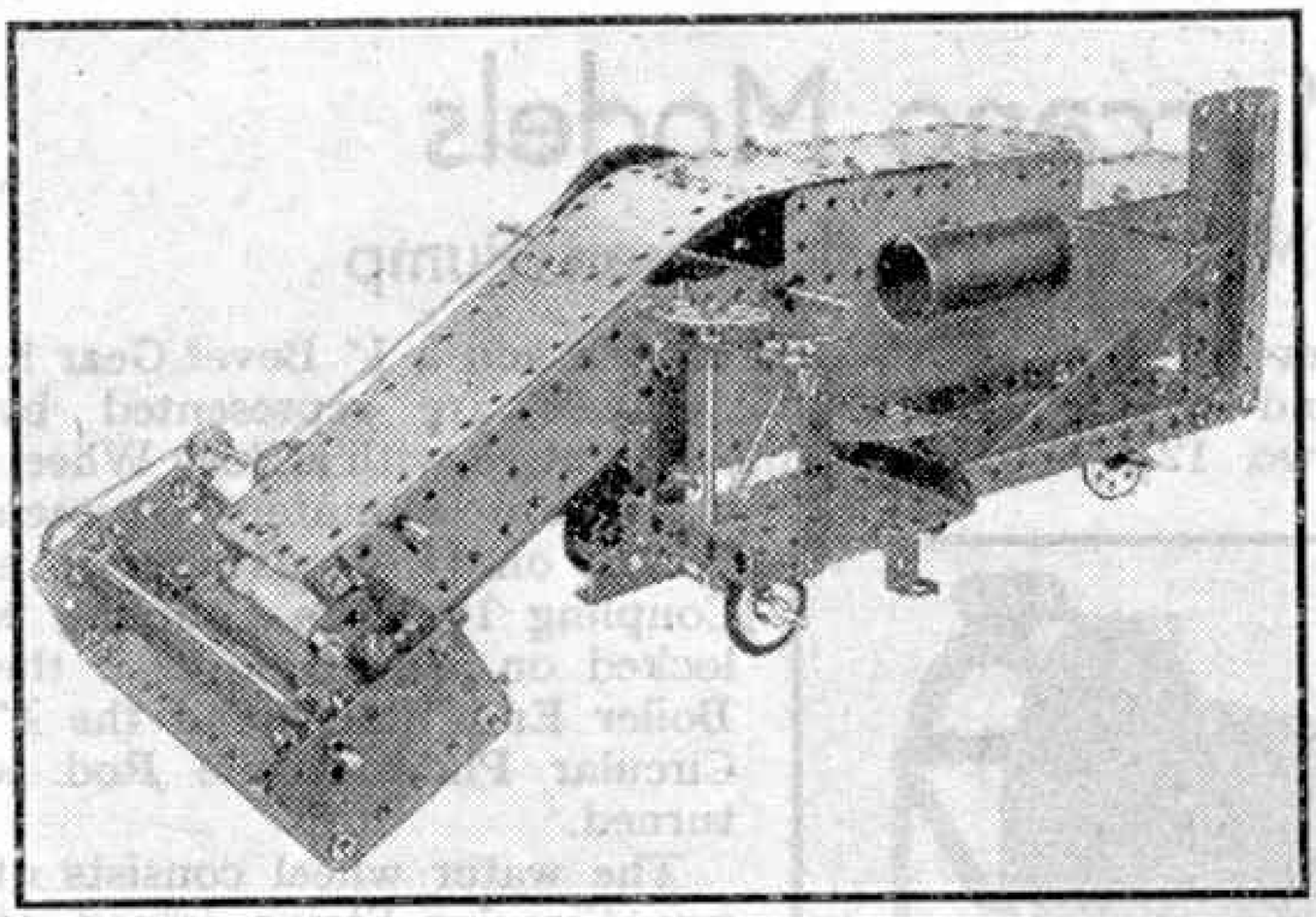


Fig. 2. The inside of the gear-box.



The model of a combine harvester referred to on this page.

A COMBINE HARVESTER BUILT FROM No. 6 OUTFIT

A combine harvester working on a farm in Bedfordshire gave a young Meccano boy an idea for a working model. He set to work with his No. 6 Outfit, and the interesting model that he ultimately completed is illustrated on this page. The boy is the nine-year-old son of Mr. L. E. Barnes, Marston, Bedford, and readers who are familiar with the Massey Harris Combine Harvester will, I think, agree that young Barnes is to be congratulated on his handiwork. The model is entirely the boy's own work, with the exception of the conveyor belt, which was made from a strip of canvas by his mother working to the boy's instructions.

HOW TO USE MECCANO PARTS

(Socket Coupling Part No. 171)

The Socket Coupling is a part of varied uses. While it is primarily designed to couple two wheels or gears together rigidly so that they can turn as a unit on a shaft, or alternatively remain stationary while the shaft carrying them turns in the Coupling, it can be used for several other purposes. The slots of the Coupling allow wheel bosses to be inserted without removing their Set Screws, while the Grub Screws of the Couplings are used to fix the bosses in position. The Socket Coupling is also provided with a circumferential groove that facilitates the fitting of a lever to slide the Coupling along a shaft.

An excellent method of using the Socket Coupling is found in the hour hand mechanism of a clock. In this case a Pinion can be arranged to drive the hour hand by engaging a 57-teeth Gear gripped in the Coupling by its boss. In the other end of the Coupling the boss of a Crank to which the hour hand is bolted is fixed, and the Socket Coupling is free to rotate on a Rod carrying the minute hand. The minute hand rod is driven separately through appropriate gearing.

Other uses for the Socket Coupling are shown in Figs. 3 and 4 on this page. In Fig. 3 the part forms the crosshead of a simple reciprocating engine. In each end of the Coupling is a Metal Ball, which is held freely in the cavity of the Coupling and slides between Strips as indicated.

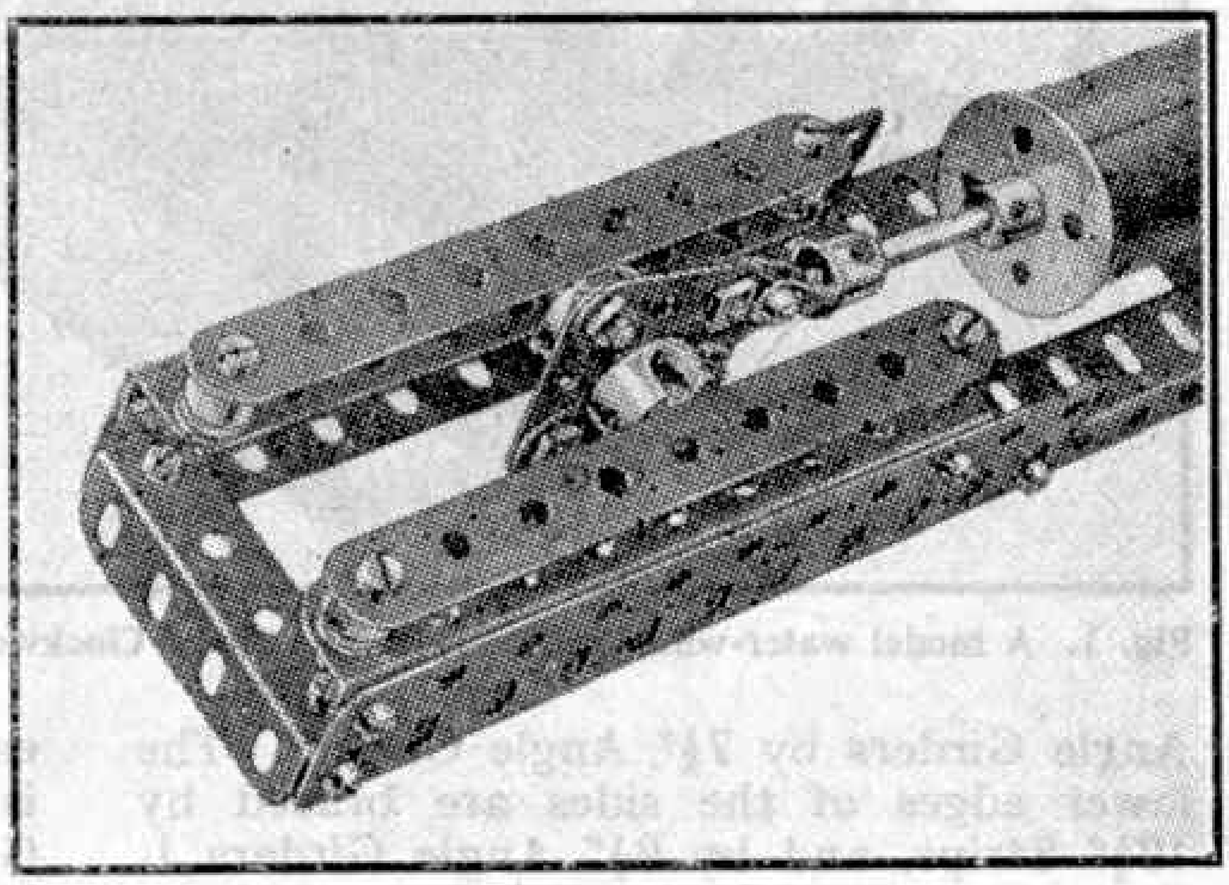


Fig. 3. A Meccano Socket Coupling used to form the crosshead of a small engine.

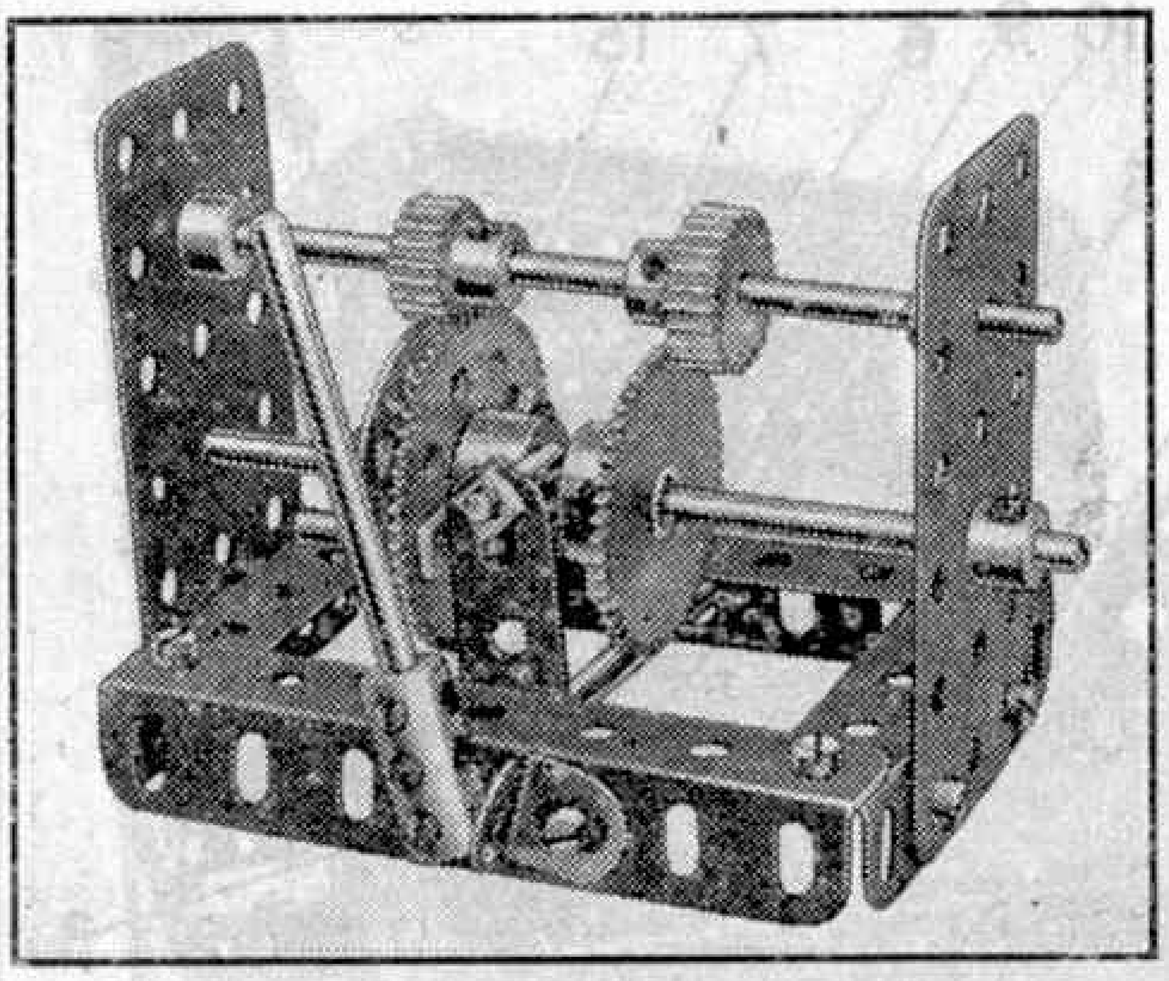


Fig. 4. A sliding change gear unit built up with the aid of a Socket Coupling.

In Fig. 4 a Socket Coupling is used to form a change gear unit in a simple two-speed gear mechanism. This example illustrates how the groove can be used to slide the Coupling by means of a pivoted lever fitted with a Threaded Pin.

PRIZES FOR MODELS OF ALL KINDS

The General Model-Building Contest announced in last month's "*M.M.*" is open for entries until 30th November. Models may be of any type and there is no restriction on the number of parts that may be used. The only condition is that models must be the unaided work of competitors. *Actual models must not be sent.* All that is required is a clear photograph or sketch, with a brief description.

The contest is divided into two sections, for Home and Overseas readers respectively, and the closing dates are: Home Section, 30th November 1949; Overseas Section, 31st January 1950.

Entries must be addressed "*October General Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13,*" and the competitor's age, name and address must be written on the back of each illustration submitted. The prizes in each Section will be: First, Cheque for £3/3/–; Second, Cheque for £2/2/–; Third, Cheque for £1/1/–; five prizes of 10/6 and five of 5/–.

New Meccano Models

Water-Wheel Mill and Wind Driven Pump

THE base of the model Water-Wheel Mill shown in Figs. 1, 2 and 3, is made by connecting together two 12½" Angle Girders by 7½" Angle Girders. The lower edges of the sides are braced by 12½" Strips, and by 9½" Angle Girders 1. The top is strengthened underneath by a 12½" Angle Girder 2.

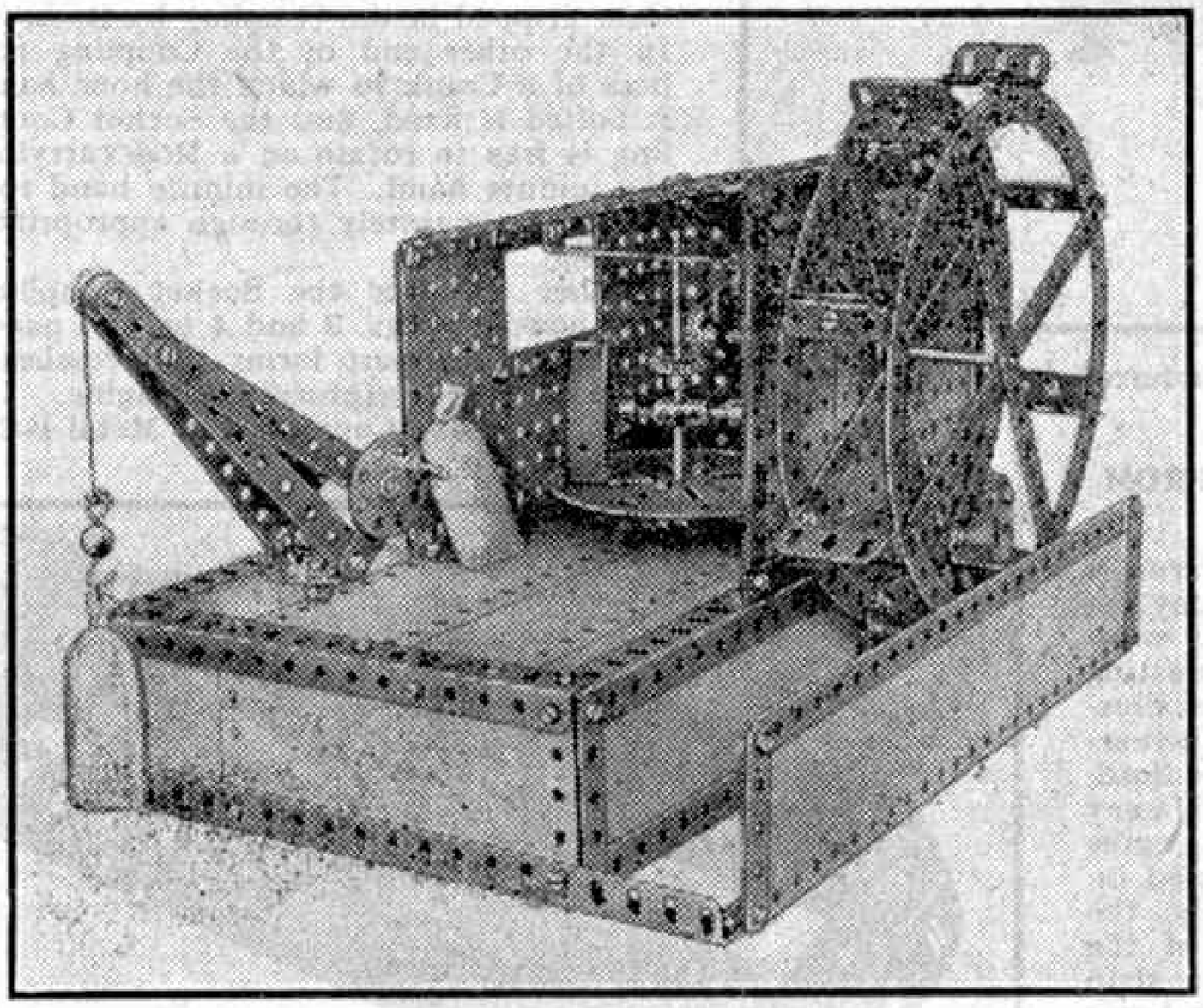


Fig. 1. A model water-wheel mill driven by a No. 1 Clockwork Motor.

The sides of the mill shed are made by bolting 7½" Angle Girders 3 and 4 to the base. Three 5½" × 2½" Flat Plates are bolted vertically to the Girder 3, and a 2½" × 2½" and two 4½" × 2½" Flat Plates are fixed to the Girder 4. The roof is made from 5½" × 2½" Flexible Plates, and the rear end is filled in by two 5½" × 2½" Flat Plates. The roof and the end are attached to the sides by Angle Brackets.

A 4" Circular Plate 5 is bolted to Double Brackets fixed to the base, and a 5" Rod 6 is passed through the Circular Plate and the base. The upper end of Rod 6 is mounted in a 5½" × ½" Double Angle Strip 7 bolted between the sides, and the Rod is fitted with a 2" Pulley 8 and a ⅞" Bevel Gear 9.

The mill stones are represented by Boiler Ends, each fitted with a Bush Wheel. They are mounted between Collars on 1½" Rods fixed in a Coupling 10. The Coupling is locked on Rod 6 so that the Boiler Ends roll round the 4" Circular Plate as the Rod is turned.

The water wheel consists of two Circular Strips joined at eight opposite points by 1½" × ½" Double Angle Strips. The paddles are 1½" Angle Girders bolted to the Double Angle Strips. Four spokes consisting of 7½" Strips are bolted across the wheel, and the inner set is fitted with a Bush Wheel so that the assembly can be fixed on Rod 15. This Rod is mounted in the side of the shed, and in a 1" × 1" Angle Bracket attached by ½" Bolts to the Double Angle Strip 7. A Collar and two Washers are placed on each Bolt for spacing purposes. Rod 15 is fitted at its inner end with a ⅞" Bevel Gear, which meshes with the Bevel 9 on Rod 6. The paddles of the wheel pass through a channel formed by a 12½" Strip

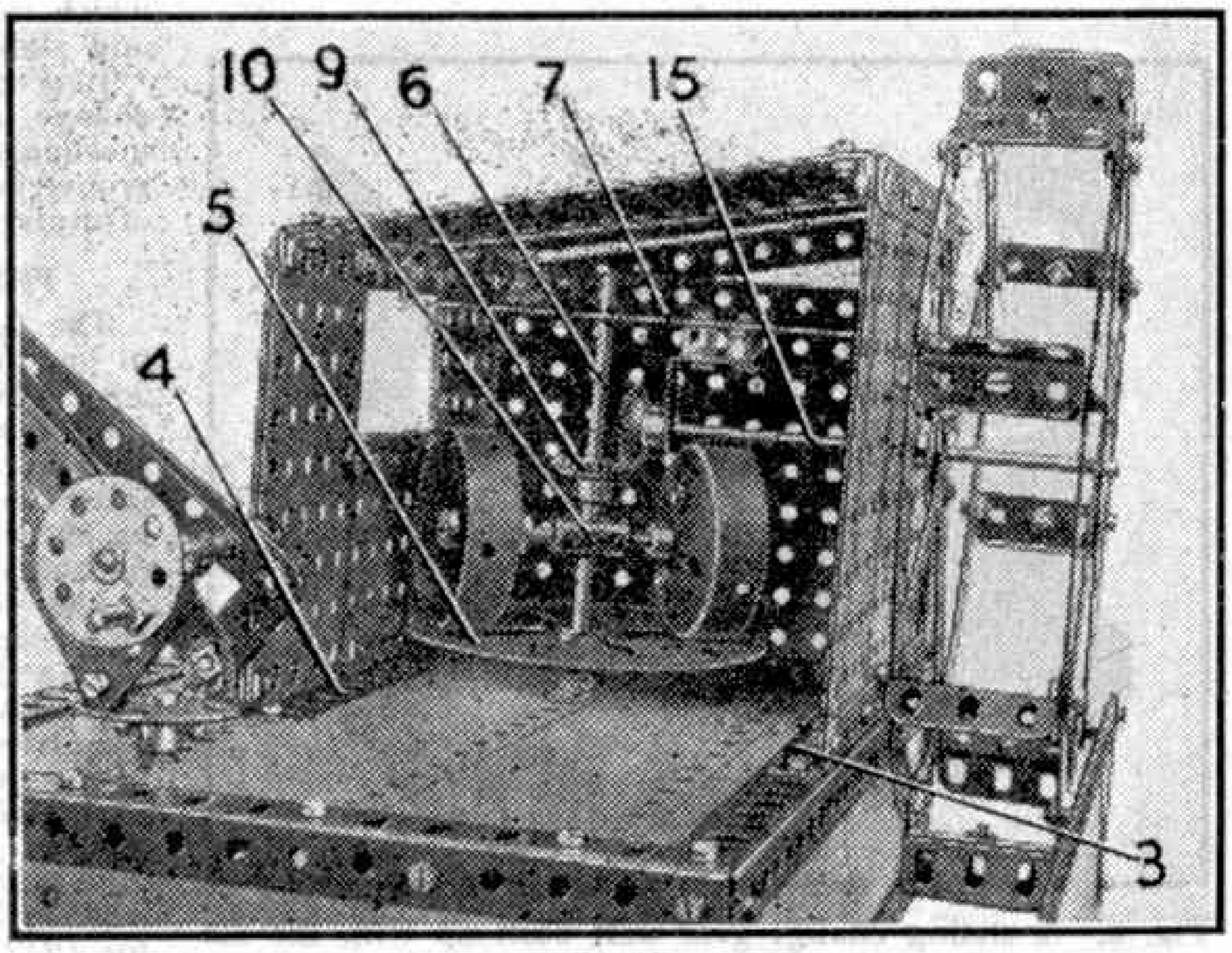


Fig. 2. Interior view of the mill, showing the mill stones.

Plate braced by Strips and attached to a 12½″ Angle Girder bolted between the Girders 1.

A No. 1 Clockwork Motor is fitted inside the base as shown in Fig. 3. The Motor is bolted to the 2″ Angle Girder 11 and the 3″ Angle Girder 12, and a ½″ Pinion 13 is fixed on the driving shaft. Pinion 13 meshes with a 57-teeth Gear on a 2″ Rod 14, and the Rod carries also a ½″ Pulley with boss fixed above the Motor side-plates. The ½″ Pulley is connected by a Driving Band to the 2″ Pulley 8.

The model is completed by adding a simple crane to allow the filled sacks to be handled easily.

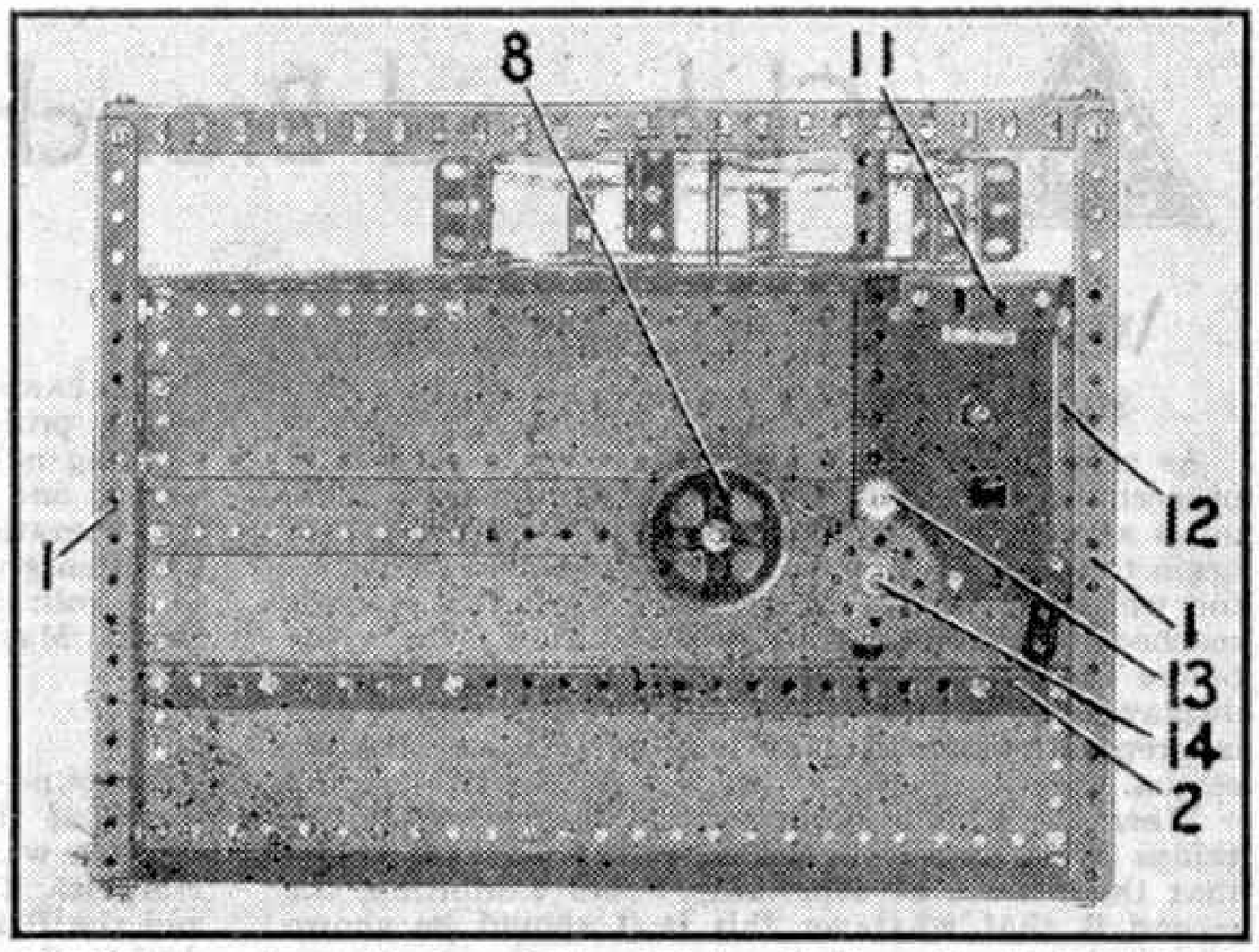


Fig. 3. An underneath view of the mill showing how the Motor drive is arranged.

Parts required to build the Water-Wheel Mill: 3 of No. 1; 6 of No. 1b; 7 of No. 2; 4 of No. 2a; 1 of No. 3; 8 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 8a; 4 of No. 8b; 1 of No. 9; 1 of No. 9c; 1 of No. 93; 8 of No. 9f; 2 of No. 11; 21 of No. 12; 2 of No. 12a, 2 of No. 15; 1 of No. 16a; 1 of No. 17; 2 of No. 18a; 1 of No. 20a; 1 of No. 22; 1 of No 23; 5 of No. 24; 1 of No. 26; 1 of No. 27a; 2 of No. 30; 151 of No. 37; 4 of No. 37a; 7 of No. 38; 1 of No. 40; 8 of No. 48; 1 of No. 48d; 2 of No. 53a; 1 of No. 57c; 7 of No. 59; 1 of No. 63; 5 of No. 70; 1 of No. 72; 1 of No. 111; 2 of No. 111a; 1 of No. 115; 2 of No. 145; 1 of No. 146a; 1 of No. 147b; 2 of No. 162a; 1 of No. 186; 7 of No. 192; 7 of No. 197; 1 No. 1 Clockwork Motor.

The simple windmill pump illustrated in Fig. 4 is designed for construction from Outfit No. 1, and can be driven by a *Magic* Clockwork Motor.

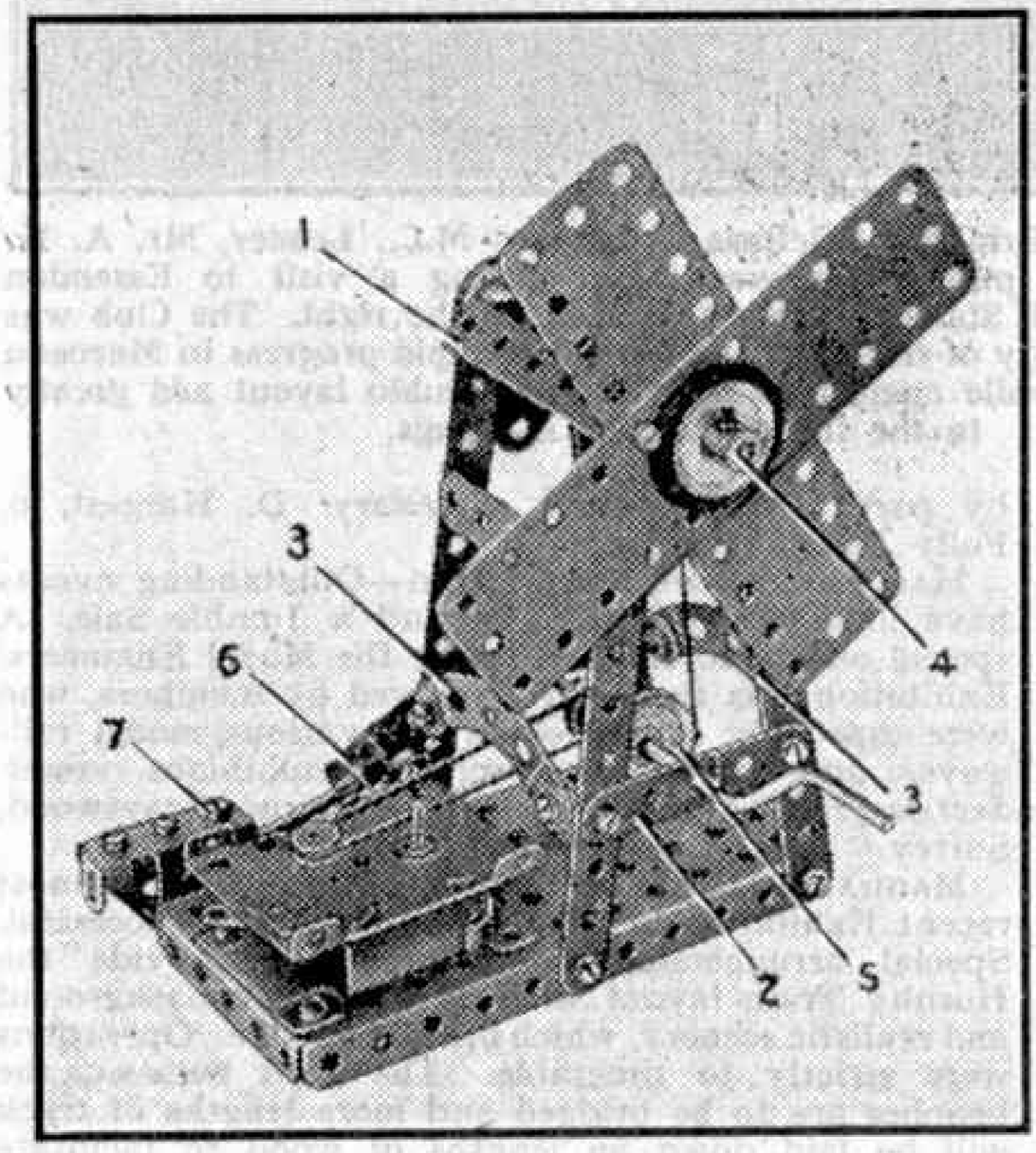


Fig. 4. A simple model windmill pump fitted with a Magic Motor.

A 5½″ × 2½″ Flanged Plate is used for the base, and four 5½″ Strips bolted to the Plate in the positions shown form the tower. The Strips on each side are connected at their upper ends by a Flat Trunnion, and are joined to the 5½″ Strips on the opposite side of the base by two 2½″ × ½″ Double Angle Strips, one of which is indicated at 1. The 5½″ Strips are also joined across at a point four holes from their lower ends by two 2½″ Strips 2 and two small radius Curved Strips 3, which are attached by Angle Brackets.

The windmill sails are 5½″ × 1½″ Flexible Plates, clamped at right angles on a 3½″ Rod 4 between a Spring Clip and a 1″ Pulley. The Rod 4 carries between the Strips of the tower a second 1″ Pulley, which is connected by a Cord belt to a 1″ Pulley 5 fixed on a Crank Handle.

A Bush Wheel locked on the Crank Handle outside the rear 2½″ Strip 2 is fitted with a 2½″ Strip held by a lock-nutted bolt. An Angle Bracket 6 is bolted to the opposite end of the 2½″ Strip, and a 2″ Rod is held in the round hole of the Angle Bracket by two Spring Clips. This Rod is free to slide in an Angle Bracket bolted to Trunnions 7.

A *Magic* Clockwork Motor can be bolted to the base and connected to a ½″ Pulley on the Crank Handle.

Parts required to build model Windmill Pump: 4 of No 2; 4 of No. 5; 8 of No. 12; 1 of No 16; 1 of No. 17; 1 of No. 19s; 4 of No. 22; 1 of No. 23a; 1 of No. 24; 4 of No. 35; 28 of No. 37a; 24 of No. 37b; 3 of No. 38; 1 of No. 40; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 3 of No. 111c; 2 of No. 126; 2 of No. 126a; 1 of No. 155; 2 of No. 189; 1 *Magic* Motor.

Club and Branch News

WITH THE SECRETARY

MODEL DISPLAYS FOR EXHIBITIONS

As soon as a Club has settled down to its winter programme, as it will have done by the time these notes appear, a desire to show what they can do will begin to make itself evident among members. Officials too will share in this feeling, and when this stage is reached it is time to think of Exhibition plans. Just before Christmas is an excellent occasion for a good display and the proceeds of this will give timely help in preparations for a really jolly party in the holiday season.

When an Exhibition has been decided upon two things must always be borne in mind. The first is that there must be something worth exhibiting; the second is that whatever this is it should be shown effectively.

By this time Club Leaders have a very good idea of model-building possibilities, and they will have found in the "*M.M.*" and elsewhere many excellent suggestions for models suitable for Exhibitions. Variety of course is important. Large working models of an impressive character must be included, but it is a good plan also to show a few small models that will impress by their very simplicity, and if some of these can be given a humorous effect by an attractive movement so much the better.

Models of the kind usually built for Club Exhibitions are always admired, even when they are just placed in rows along a series of tables, but they are far more effective with some kind of scenic background. In fact, it is often well worth while to plan and build an entire scene to display a special group of models to advantage. What is done must be done well. As much thought and consideration should be given to the surroundings of really good models as to the line-side scenery of a first-class Hornby or Hornby-Dublo Train layout included in the same Exhibition.

I hope that every Club and Branch will be able to hold a good Exhibition before the end of the present year, and that this will be followed later by an equally successful party. Start preparations now.

CLUB NOTES

WATERLOOVILLE AND COWPLAIN (PORTSMOUTH) M.C.—An enjoyable day was spent at Southsea, where a glimpse was obtained of the "*Victory*" in dry dock. Members are busy making models at home for an Exhibition to be held this month. The Club at present is without a room, and the proceeds of the Exhibition will be used to secure one. The "*Queen Elizabeth*" model is still collecting for charitable purposes. Club roll: 10. *Secretary:* A. J. Nicholson, 213, Sultan Road, Buckland, Portsmouth.

HORNSEA M.C.—The usual Club room pursuits are being followed by all sections. Attention has now been turned to Football and excellent games have been enjoyed by members. Club roll: 27. *Secretary:* R. Lancaster, Carlton House, Carlton Avenue, Hornsea.

AUSTRALIA

MAYLANDS (PERTH) M.C. — A discussion on the year's projects has been held. The usual Model-building is now in progress, together with Fretwork, Games and Film Displays. Members have practised the operation of a film projector, and instruction has been given on the installation of lights on models. Club roll: 38. *Secretary:* V. Chester, 16, Kennedy Street, Maylands, Australia.

BRANCH NEWS

STROUD—Members enjoyed Games and Refreshments at the second Birthday Party of the Branch. The tea was kindly served by Mrs. Wotton and Mrs. Hargest. Track Meetings continue to be successful, and the Branch has certainly made excellent progress during the last year. The successful Exhibition in May gave evidence of this and of the interest shown by parents and friends. *Secretary:* D. Hargest, 6, Folly Lane, Stroud.

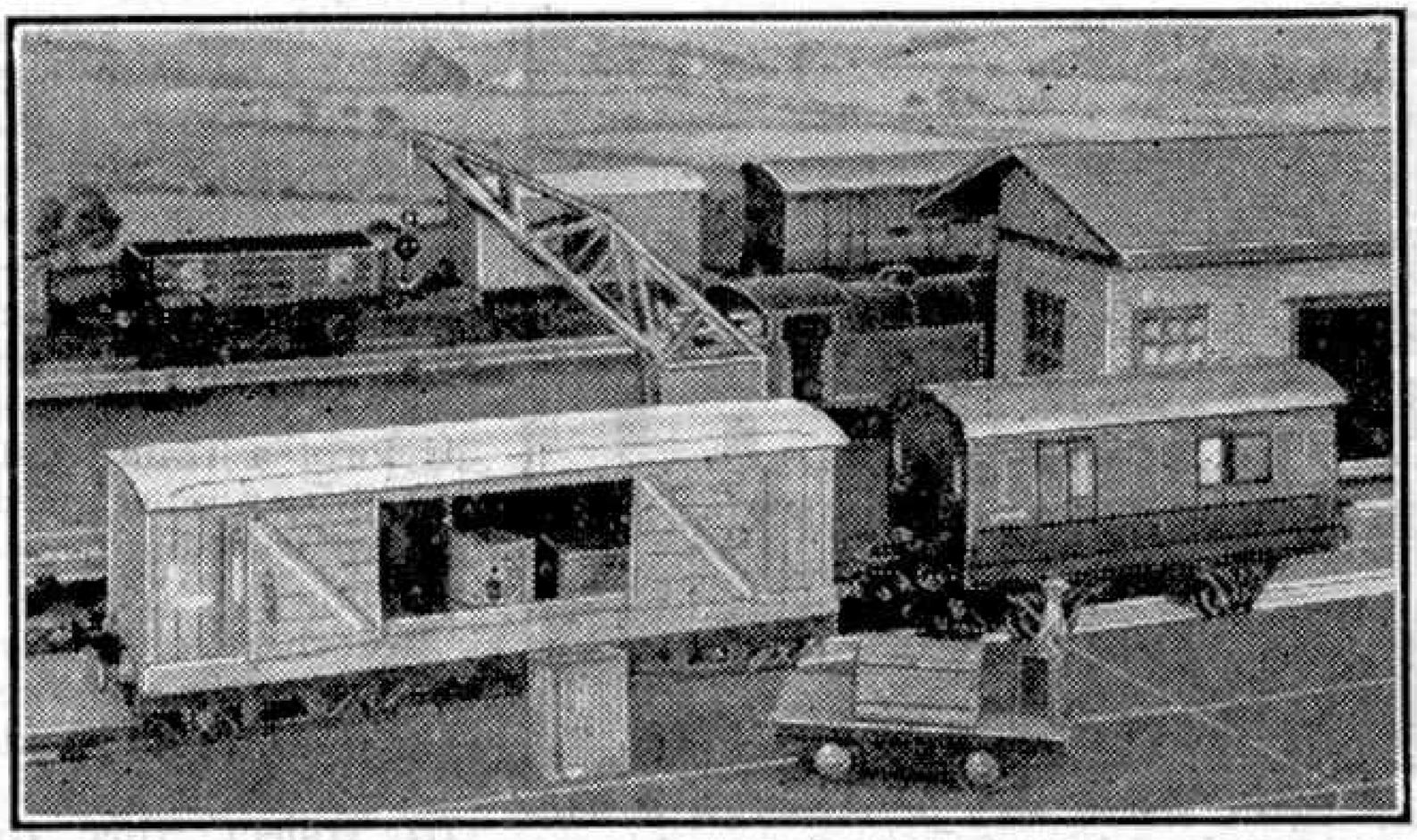
Members of the Brighton (Victoria, Australia) M.C., Leader, Mr. A. K. Ballantyne. Our photograph was taken during a visit to Essendon Aerodrome, and J. Stamp, secretary, is seen on the right. The Club was affiliated in January of this year and has made rapid progress in Meccano Model-building, while operations on a Hornby-Dublo layout add greatly to the interest of the meetings.

HASLEMERE AND GODALMING—Outstanding events have included a Film Show and a Jumble Sale. A special outing to London to see the Model Engineers' Exhibition was thoroughly enjoyed by members, who were especially interested in the various model railways, and a radio-controlled amphibious vessel. *Secretary:* T. Ash, Lower Birtley Farm, Grayswood, Surrey.

MAGDALEN COLLEGE SCHOOL (OXFORD)—The most recent Exhibition of this Branch was very successful. Special arrangements were made to provide the Hornby Train layout with an attractive background and realistic scenery, which included a lake. Operations were strictly to timetable. The gaps between the benches are to be bridged and more lengths of track will be laid down on lengths of wood to facilitate building and dismantling on Track Nights. *Secretary:* R. A. Bowen, 33, Richmond Road, Oxford.

Loading Hornby Goods Trains

AFTER a Hornby Train owner has become used to the running of his train and begun to develop his railway and the operations carried out on it, one of the first things he does, usually, is to provide loads of some sort for his goods wagons.



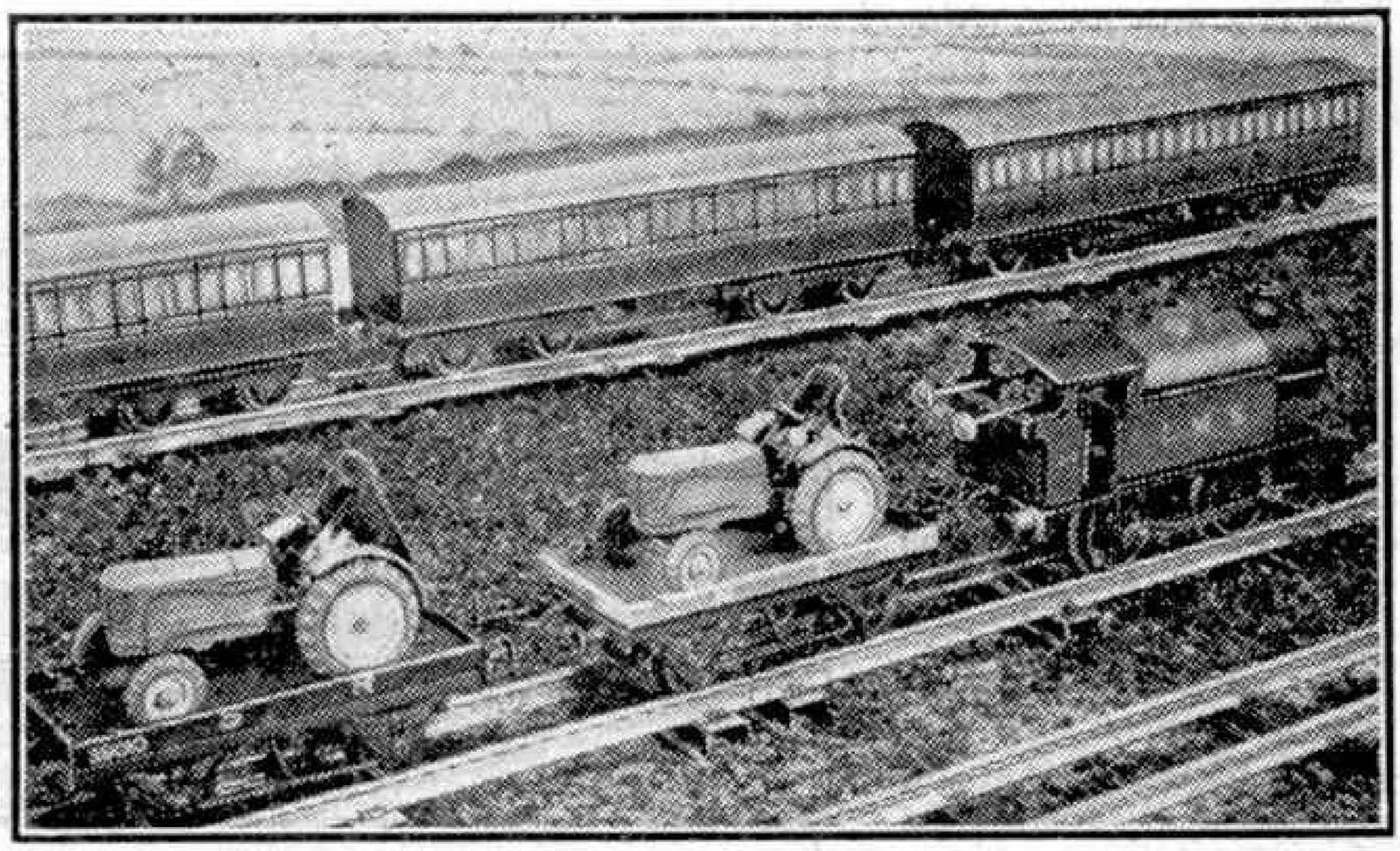
Parcels traffic in full swing. A Dinky Toys B.E.V. Electric Truck is a useful vehicle on a Hornby railway platform.

The simplest loads for ordinary open Wagons are found in quite common articles such as empty matchboxes, cotton reels and various similar things that can be found in every household. These can be used as they are, or ingenious boys can convert them with the aid of a little glue, card or wood strips and paint, into quite respectable cases, crates, drums and so on. Goods of this kind look well in wagons, or they can be loaded into Hornby Vans which have sliding or opening doors that make this possible. In addition a varied collection of such merchandise gives a fine busy look to the goods platform or loading bank.

These loads have the advantage of lightness so that they do not have any noticeable effect on the running of the engine. The power of clockwork engines is restricted, so we must arrange our loads accordingly. Many younger boys do tend to overload their wagons, particularly by filling them up with materials like small stones or sand; or even, on special occasions, with coal. Another point is that if a wagon filled with any of these loose materials is overturned, there is liable to be domestic trouble!

Such materials can be used in the form of a thin layer fixed in position. Cut and bend to shape a false bottom of card, something like the lid of a box, to fit inside each open wagon. The top surface of this "lid" should be coated with glue, and then have sand or stones, or other materials, sprinkled on. When the glue has set, the loose material should be removed.

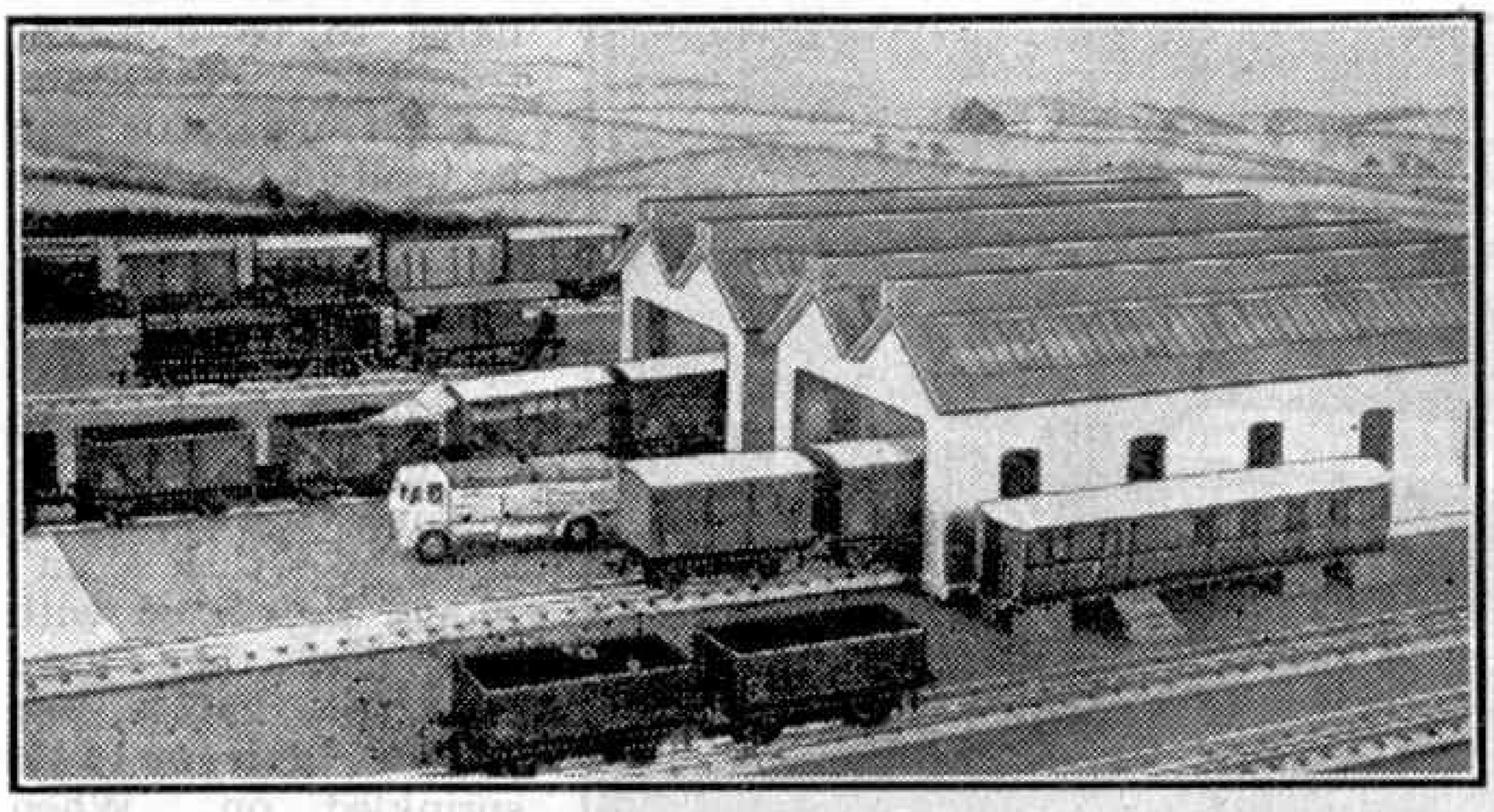
Good use can be made of various Meccano Dinky Toys for loads, as well as for their normal use alongside the railway. The lower illustration shows part of a consignment, in miniature, of Massey-Harris Tractors loaded on Hornby Flat Trucks. The upper picture shows an interesting use of the B.E.V. Electric Truck, which is a handy vehicle for either goods or passenger station work.



Dinky Toys Massey-Harris Tractors ready for their journey on a Hornby railway. The Hornby Flat Truck is ideal for such loads.

Engine Control in Hornby-Dublo

MANY owners of Hornby-Dublo Train Sets do not realise how much more fun is to be gained from the operation of a train when they have learned to control their engine movements. Operation of a Hornby-Dublo train is so simple that the owner of a new set is usually content to assemble his train on the track by pushing the engine and vehicles together, so that the couplings engage automatically as they are designed to do. Whether this operation is carried out gently or otherwise, the result is the same. The wagons are coupled together and the train is ready to go.

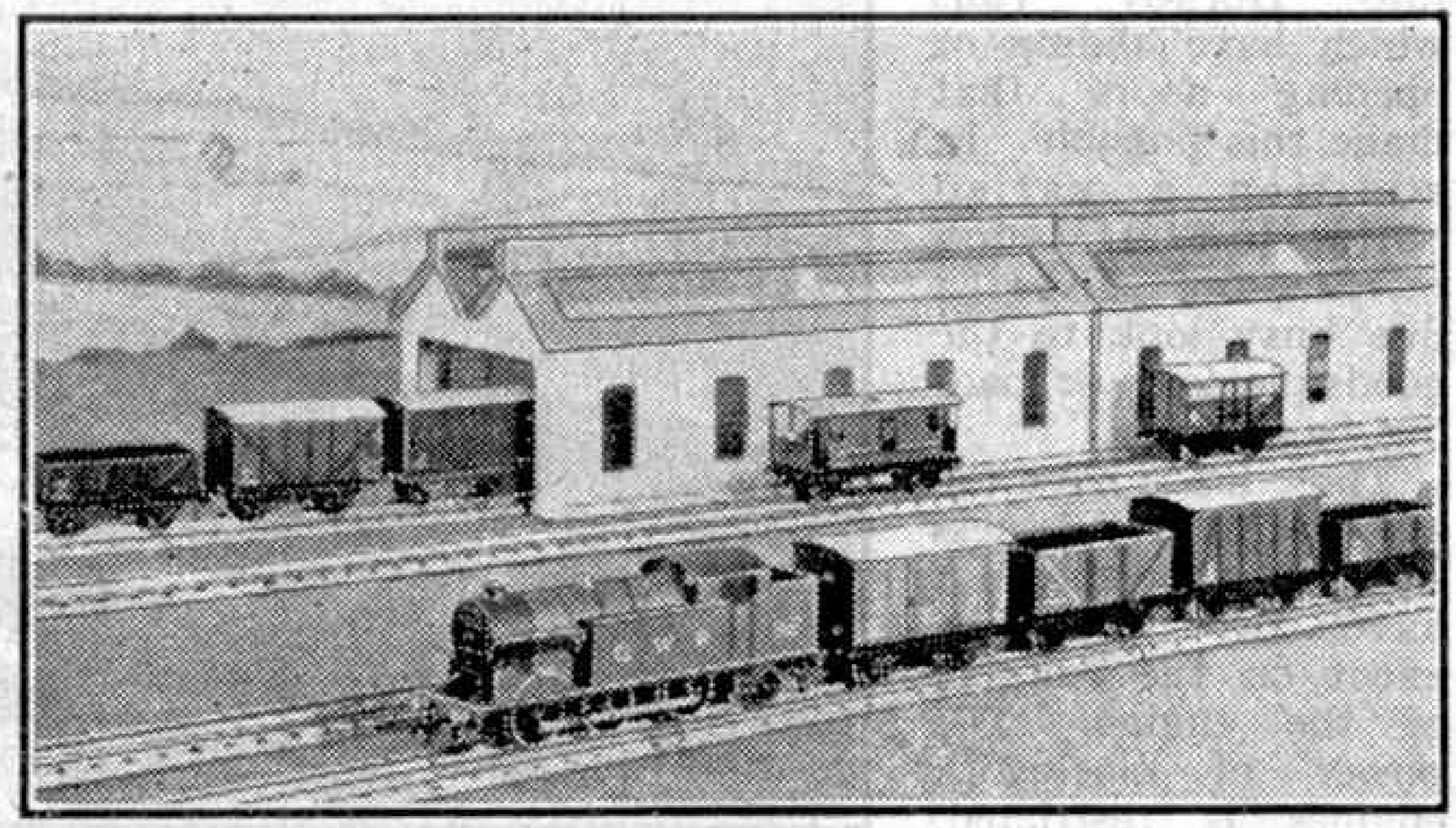


A goods yard on a Hornby-Dublo layout. Similar sheds or warehouses to those shown in these pictures can be made at home from wood or card.

It will be found much more fun to put the vehicles on the track and to back the engine on to them so that they are coupled one at a time; first the Wagon, then the Van and finally the Brake Van. With practice in handling the Controller, it will be found possible to bring the engine up to the first vehicle and couple up without touching the next one, even when the two are standing close together. It is, in fact, quite interesting to see how closely the vehicles can stand and yet still be coupled separately. A nice touch on the Controller handle makes a great deal of difference.

The improvement in operation that results from this kind of working can be of really practical use when we come to carry out more involved operations on an extended track layout. There will, perhaps, be a Van alongside a goods platform, or standing with a Dinky Toys motor lorry drawn up by it as if the load is being transshipped. A Wagon near to it is to be taken by the engine to form a train, and the driver must pick it up without disturbing the Van.

Another possibility is that the Brake Van is standing next to the Buffer Stop. To collect this to complete the train, the driver must check his engine at the right moment so that, as the engine stops, the end Wagon just couples to the Brake Van, and no more; otherwise the Van will be bumped against the Buffer Stop, which is bad operating. Similarly clean working in passenger train assembly is just as necessary. Although there are no passengers' feelings to be considered, there is no reason why Hornby-Dublo Coaches should not be put together as gently as real ones!

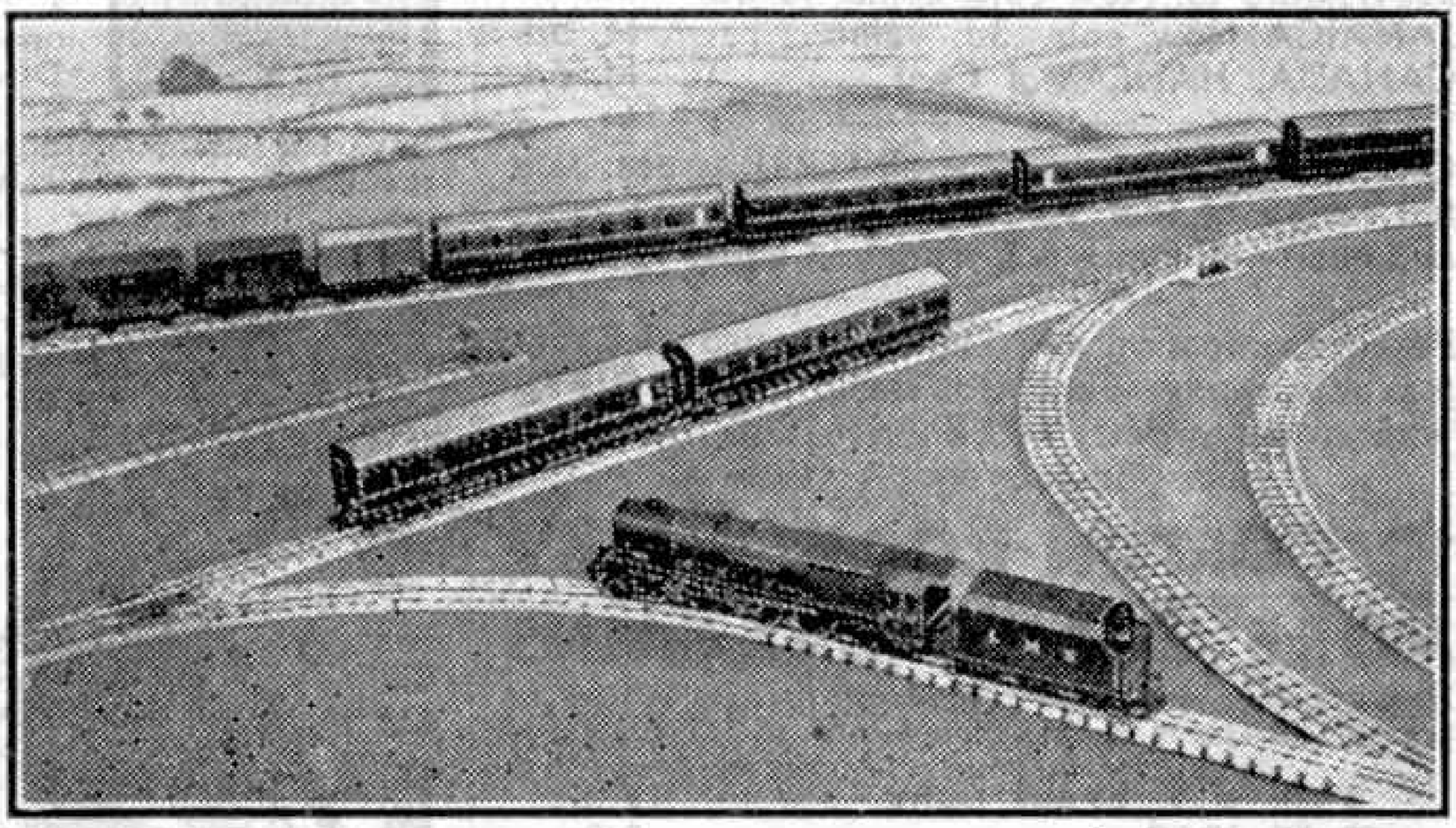


A goods train made up and ready to go, with a Hornby-Dublo standard 0-6-2 Tank Locomotive at its head.

A Junction Scheme in Hornby-Dublo

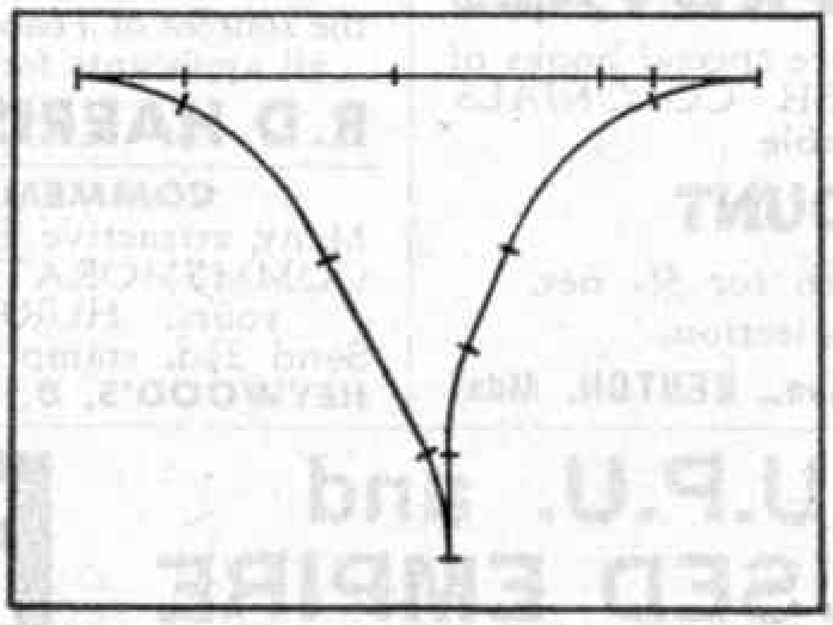
A JUNCTION layout that has various interesting possibilities is the subject of the picture and diagram on this page. It can form part of almost any system where there is a fair amount of space. It requires three sets of Points in its construction and exact details of its layout will be apparent from the diagram.

Many such layouts are found in actual practice, some of them being completely double-tracked. A special advantage of the three-sided or triangular junction is that it can be used to connect a main line with a branch in such a way that traffic in either direction on the main line can pass straight on to the branch. The branch line may lead to a station, perhaps; or an engine depot, or possibly a goods yard. Thus trains leaving the station or yard can reach the main line and proceed on their way without the need for any "running round" to get the engine at the right end of the train.



The Hornby-Dublo "Duchess of Atholl" being worked round the triangular junction described on this page. Its Coaches are standing clear of the main line Points.

In the diagram we will assume that the straight length of track at the top of the illustration forms part of the main line. Working in a clockwise direction, the R.H. Points in the left-hand corner are followed by two Straight Rails and a Straight Quarter Rail before the trailing end of the L.H. Points is reached. Beyond these Points, in the right-hand corner of the diagram, the main line can continue as before. The curved branch of these Points leads to a Curved Rail, then comes a Straight Half Rail and a Curved Half Rail, the latter being attached to the trailing end of the straight member of the L.H. Points in the bottom centre of the diagram. Between the curved branch of these and the curved branch of the Points where we started come a Straight Rail and a Curved Rail, in that order. Those who use this layout will find that it is not quite perfect geometrically, but it can be fitted together sufficiently well for practical purposes.



Rails required: 2 EDA1 Curved Rails, 1 EDA1½ Curved Half Rail, 3 EDB1 Straight Rails, 1 EDB1½ Straight Half Rail, 1 EDB1¼ Straight Quarter Rail, 1 EDPR Points (R.H.), 2 EDPL Points (L.H.).

Apart from its use in making traffic flow more easily to and from the branch line, which we will suppose is attached to the Points that directly face the reader of this page, the triangular junction is specially useful when operations require an engine or complete train to be turned round. To turn an engine, the train heads along the straight part of the triangle and stops so that the coaches are clear of the Points, as they are in the photograph. The engine is detached and runs forward clear of the switch rails. Then by working it round the other two sides of the triangle, the engine is turned and we are able to back it on to the opposite end of the train ready for the return journey.

An engine can only be run round if its train can stand between any two Points, but trains of any length can be turned complete.

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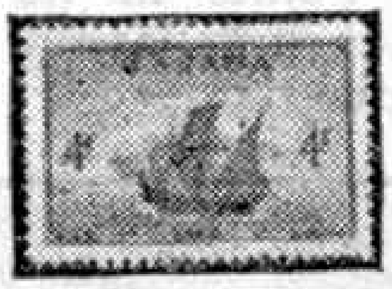

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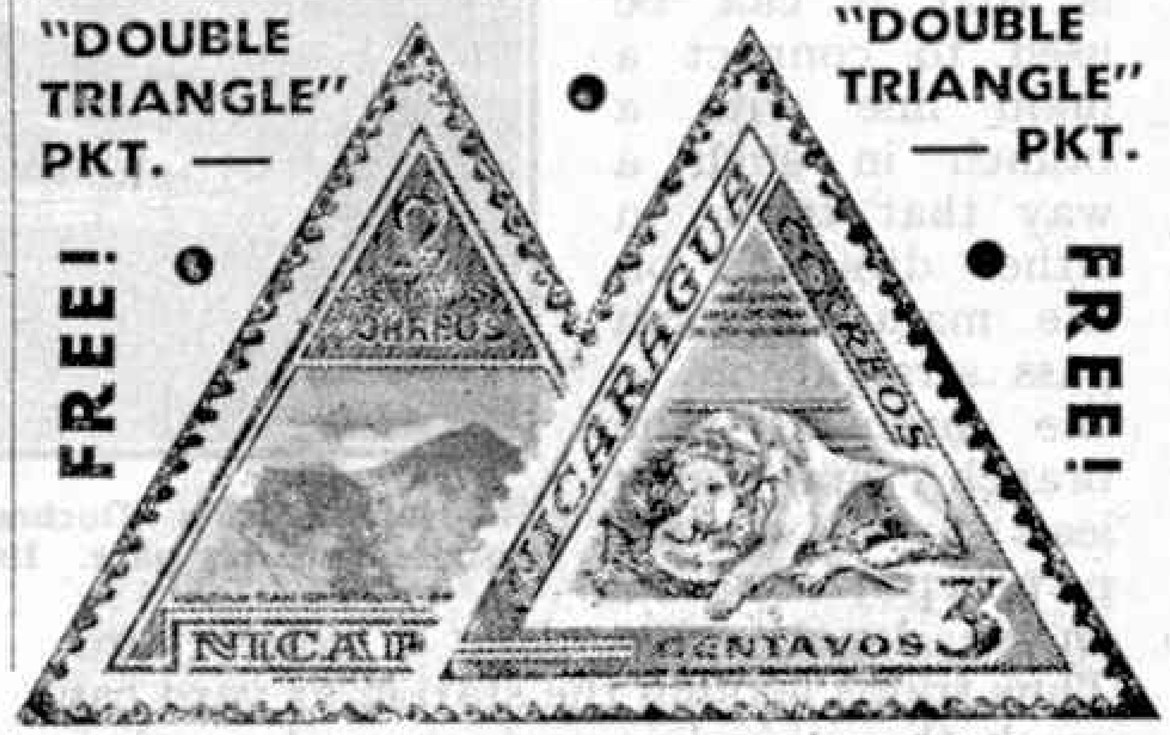

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For other Stamp Advertisements see also pages 442 and xi.

Stamp Collecting

India's New Issue

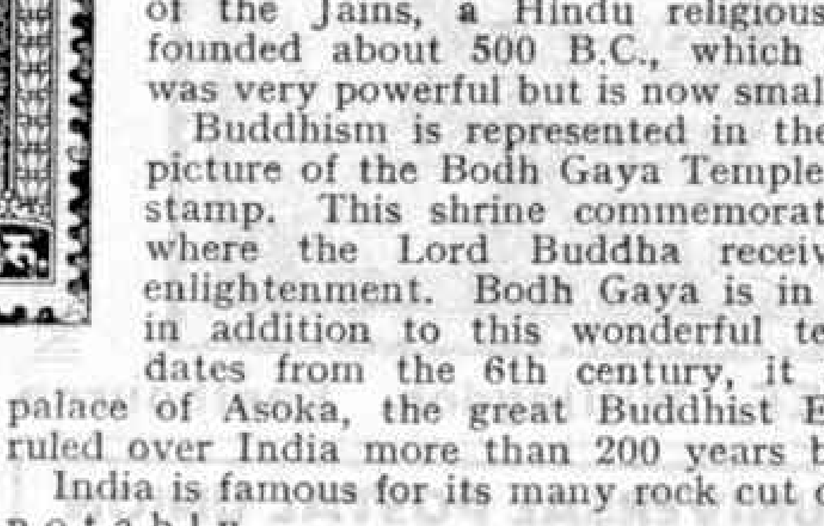
By F. Riley, B.Sc.

ONE of the most interesting of recent events in the stamp world is the appearance of India's first definitive issue. Apart from commemoratives and other special stamps, India so far has continued to make use of the King George VI series. These will be replaced by the new stamps, but will not be withdrawn. They will remain on sale until stocks are exhausted.

The new stamps also celebrate the second anniversary of India's independence. There are 16 of them, with values ranging from 3 pies to 15 rupees. The four highest values, of 2, 5, 10 and 15 rupees respectively, are printed by offset lithography and have borders in a second colour. The 12 lower values are produced by the letterpress process. All are being printed in India on paper with the multiple star water mark. They carry the words "*India*" and "*Postage*," and the values are inserted in two languages, English and Hindi.

The designs chosen for this long new issue depict subjects of archæological and historical interest. These include many remarkable sculptures, but most of them are great buildings that give a wonderfully vivid impression of the magnificent architecture of India through the ages. The 5r. value reproduced on this page provides a good example in a reproduction of what is regarded as one of the world's greatest wonders. This is the Taj Mahal at Agra, a famous Indian city on the Jumna, which flows into the Ganges. It was built by the Emperor Shahjehan about 300 years ago as a mausoleum for his wife Mumtaz Mahal, and he himself is also buried in it. The mausoleum is of white marble, standing on a platform of red sandstone overlooking the river, and it rises gracefully to a height of nearly 200 ft. It is surrounded by gardens, and sunlight penetrates into its interior through delicately carved lace-like screens of marble, while semi-precious stones are let into its walls.

Shahjehan was one of India's most famous Mohammedan Emperors and his reign is noted for the many great buildings erected in it. Another of these, illustrated on the 2r. value of India's new issue, is the great Red Fort at Delhi. An earlier monument in that ancient and famous city is shown on the 10r. stamp. This is the Qutb Minar, a great five-balconied tower of sandstone, erected six centuries ago, that rises to a height of 238 ft. Its colour ranges from red in the lower portion through pink to orange at the apex, and the tower has been described as the most perfect in the world.



Just as the great cathedrals of Europe bring us visions of the past, so in India great temples illustrate the magnificence of Indian religious architecture of former centuries. There are five of these wonderful structures among the designs of the new series. One of them is the Golden Temple of Amritsar on the 12 anna value, shown here. This temple was built nearly 400 years ago, and was rebuilt in 1776. Another is the Satrunjaya Temple, an ornate shrine in Palitana, one of the many temple cities of Western India. It is one of the sacred places of the Jains, a Hindu religious community founded about 500 B.C., which at one time was very powerful but is now small in numbers.

Buddhism is represented in the series by a picture of the Bodh Gaya Temple on the 3½ a. stamp. This shrine commemorates the place where the Lord Buddha received supreme enlightenment. Bodh Gaya is in Bengal, and in addition to this wonderful temple, which dates from the 6th century, it also has the palace of Asoka, the great Buddhist Emperor who ruled over India more than 200 years before Christ.

India is famous for its many rock cut cave temples, notably those in Ajanta and on Elephanta island. Ajanta is in Hyderabad, and its wall paintings are of very high standard and have preserved a wonderful record of Buddhism throughout eight centuries. from 200 B.C. to A.D. 600. The caves are represented in the new Indian series by the design of the 3 p. value, which shows a panel of one of the pillars, the outstanding feature of which is a wonderfully vivid representation of an elephant. Elephanta is an island in Bombay Harbour, and its name commemorates a stone elephant that formerly stood near the landing place. The art of the rock cut caves of the island is illustrated on the 9 p. value by a design showing a colossal image representing S'iva, the third person of the Trimurti, the trinity of Hinduism.

It is of course impossible to illustrate on this page all the stamps in this very fine series, but those shown will give readers some idea of its attractions. The stamps will certainly form a splendid addition to any collection. Owing to the inclusion of four high values the full set is of course somewhat expensive, but there should be ample supplies of used copies, as was pointed out last month in "*Stamp Gossip*," and every reader is strongly advised to make an effort to get as representative a set as he can.

GREECE ROOSEVELT MOURNING

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G. L. WRIGHT, Palace Street, Canterbury, Kent

For other Stamp Advertisements see also pages 440 and xi.

Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

WHEN in May 1940 Great Britain commemorated the centenary of the "Penny Black," the country itself was too occupied by the war to do much in the way of celebrating. The authorities did provide a set of stamps, and while the single design used could hardly have been more moderate, that set of stamps was the forerunner of countless emissions which will go on appearing for many years yet, as our own country was well ahead of the rest of the world.

Of course there have been claims from time to time that our "Penny Black" was not the first postage stamp at all, but nobody seems to take much notice, and all the world still gives pride of place to our own effort.

Belgium, among other countries, has celebrated its postal centenary this year. The stamps of this country used to be very popular in Great Britain, but collectors got so tired of the numerous issues, particularly as some of them were of high face value, that most of them ceased to take any further interest in them. It's rather a pity, for many were very beautiful, but the postal authorities have only themselves to blame.

It was mentioned on one occasion how ordinary were most of the modern stamps of Argentina. Well, this country has excelled itself, for recently it issued a single stamp, to commemorate the taking of the National Constitution Oath, that was a real handsome affair indeed, and thereby showed that it can produce stamps worthy of the old "Rivadavias" when it pleases.

Most Argentina stamps which come out from time to time are quite easily obtained, used—it is not possible to import them mint except by barter—and collectors looking for a new country to work on might do worse than tackle this great republic, starting the collection say about 1920.

Collectors of KG. VI issues of course won't have time to think about taking up new countries just now, for they are up to the eyes in it with the numerous "U.P.U." issues. But just as a change they might consider buying a few sets of these same issues which are being emitted by countries outside the Commonwealth. All are quite attractive.

There is the investment angle also to consider. These "U.P.U." issues are of universal interest and in time no doubt will become quite valuable in a moderate sort of way. At any rate, they'll easily pay for their keep at least, which is more than one can claim for most other things that one buys for pleasure.

A collector asks why the writer of these notes rarely mentions Russian stamps. Well, to be candid, the real reason is that most of these are hardly

stamps at all as far as postal use is concerned. That more or less applies similarly to many modern stamps, but Russian stamps differ from all of these in one important particular—the Government holds the plates and apparently goes on printing further supplies as needed. In other words, these stamps have no chance of increasing in value, and however attractive a collection may be, its resale value has to be considered by most of us. These modern Russian stamps sell very badly indeed, so if we must spend money on stamps—and we get precious few without—it will have to be on those which by their appreciation in value enable us to sell them when we want to, at not too great a loss.

It was quite a shock to collectors of Egypt, Iraq, Transjordan and Burma when Gibbons announced that, in future, stamps which these countries issued while outside the Empire would be placed in the foreign section of their catalogue. Many thought that this would cause a slump in values, but apparently there has been very little of this, and more than one dealer has said that little difference has been noted.

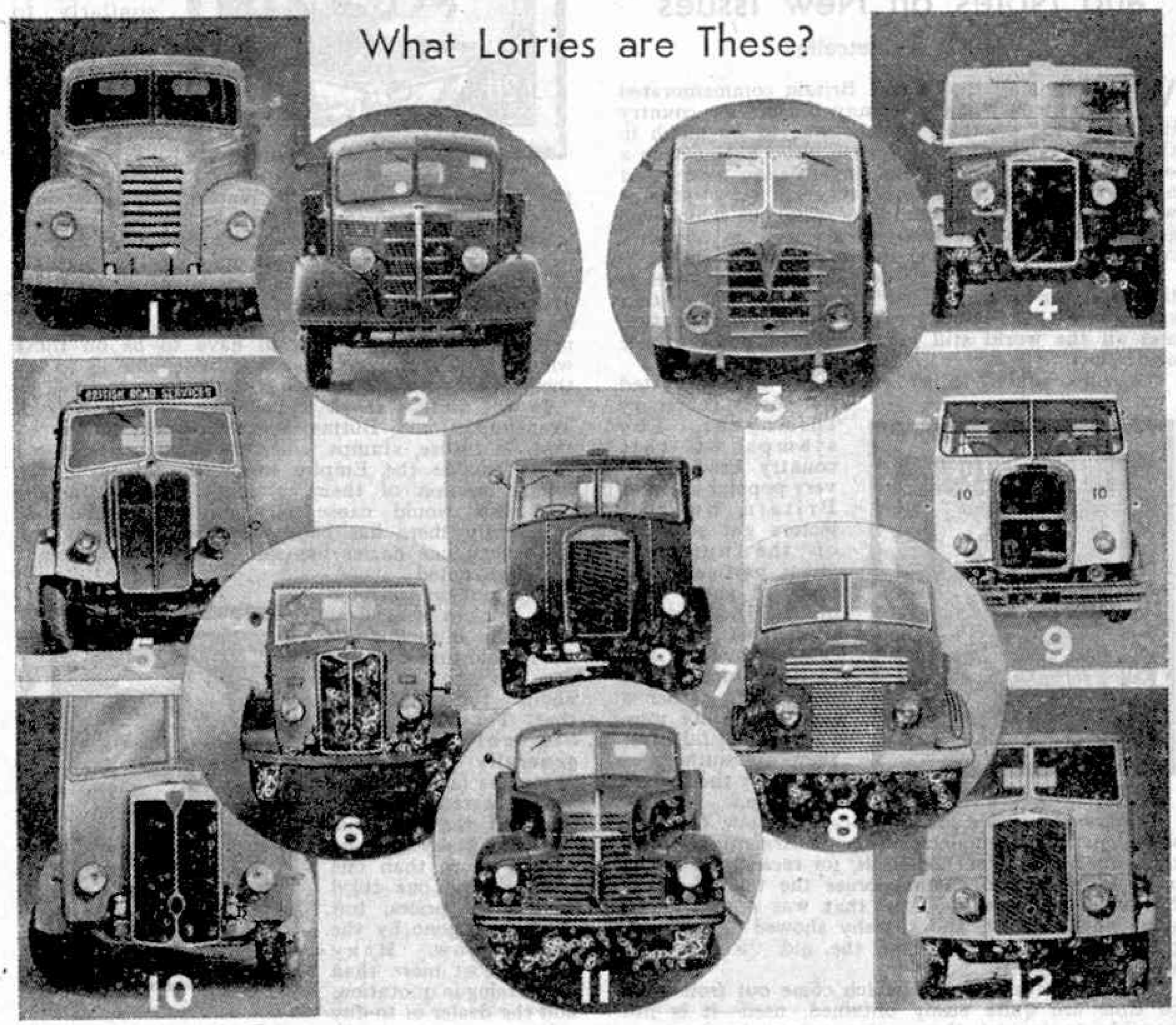
The modern collector does think a good deal more for himself than did the old timer. There can be no question about the truth of that. For instance, the old collector was generally completely guided as far as buying prices were concerned by what the catalogue quoted. Many refused to pay more than one half or even one third of marked prices, but all that is gone by the board now. Many stamps cost more than the catalogue quotation, and the dealer of to-day refuses even to consider what the catalogue might say, which of course is only logical. Anyhow the point is that the stamps of the countries recently removed from the colonial section of the catalogue are going along almost as if nothing had happened, and without a doubt collectors are all the better for exercising their freedom.

It would have been a pity to drop such colourful countries as Egypt and Burma, and as far as the latter country is concerned, maybe it will return to the Commonwealth at no distant future. What will Gibbons do about it then?

Our last illustration this month is of a finely engraved stamp from Hungary. Three stamps were issued recently to commemorate the death of their great poet and patriot Sandor Petoñ. It is not often that Hungary departs from the photogravure process for the production of its postage stamps, but the result has certainly justified the change. Nine million copies of each value have been issued, so used should be plentiful.

Competitions! Open To All Readers

What Lorries are These?



Two of the most successful "*M.M.*" competitions of recent months were those of April and July, in which readers were given photographs of the front and rear of well-known makes of motor car and asked to identify them. The welcome given to these contests suggested a further one of the same type in which lorries were concerned, and here it is.

On this page are 12 pictures, each of which shows a front view of a well-known make of British motor lorry. The names carried by some of these have been removed or obscured, to avoid making the contest too easy! Apart from this no change whatever has been made, so that readers should be able to recognise the makes by the characteristic radiators and other details. What they are asked to do is to send in a list giving the number of the pictures, and the names of the corresponding lorries and of the firms making them. Care must be taken to give sufficient information to show that in each case the model has been identified completely.

There will be prizes of 21/-, 15/- and 10/6 for the three best entries in order of merit, and in the event of a tie the judges will take neatness and novelty into consideration. There will be a separate section for overseas readers, with prizes of the same value, and in both sections Consolation Prizes also will be awarded. Entries must be addressed "*Lorry Faces Contest, Meccano Magazine, Binns Road, Liverpool 13.*" Closing dates: Home Section, 31st December; Overseas Section, 31st March 1950.

November Photographic Contest

The eleventh of our 1949 series of photographic contests is a general one, in which we invite readers to send in prints of any subject. There are only two conditions—1, that the photograph must have been taken by the competitor; and 2, that on the back of each print must be stated exactly what the photograph represents.

The competition will be in two sections, A, for readers aged 16 and over, and B, for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas sections.

In each section prizes of 21/-, 15/- and 10/6 will be awarded. Entries should be addressed "*November Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.*" Closing dates: Home Section, 30th November 1949; Overseas, 28th February 1950.

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd.

Competition Results and Solutions

OVERSEAS

MARCH 1949 PHOTOGRAPHIC CONTEST

1st Prize, Section A: P. H. Brett, Christchurch, N.Z.; Section B: C. G. C. Cotesly, Cape Town, S.A. 2nd Prize, Section A: Miss E. F. Neilson, South Canterbury, N.Z.; Section B: D. Hicks, Minden, B.A.O.R. 3rd Prize, Section A: J. C. Carter, Stellenbosch, S. Africa; Section B: G. S. Shiroor, Bombay 7, India. Consolation Prizes: R. Thom, Broken Hill S. Africa; H. Arnold, Dublin, Eire; G. Ditchfield, Dunedin, N.Z.; R. M. Cox, Tauranga, N.Z.; S. P. Scott, Johannesburg, S. Africa; P. Keely, Dublin, Eire; P. Mathias, Sliema, Malta G.C.; A. Martley, Wynberg, S. Africa; C. Formby, Johannesburg, S. Africa.

APRIL 1949 PHOTOGRAPHIC CONTEST

1st Prize, Section A: D. A. H. Bridson, Dunedin, N.Z.; Section B: M. Walsh, Auckland, N.Z. 2nd Prize, Section A: J. O. Craigie, Sydney, Australia; Section B: R. Rimmer, Cape Town, S. Africa. 3rd Prize, Section A: M. L. McAllister, Victoria, Australia; Section B: E. J. Ellis, Hamilton, N.Z. Consolation Prizes: Miss M. B. Bedlington, Auckland, N.Z.; L. F. Jones, Durban, S. Africa.

APRIL 1949 CAR FACES CONTEST

1st Prize: I. Stephenson, Auckland, N.Z. 2nd Prize: G. Hamilton, Auckland, N.Z. 3rd Prize: R. Kidd, Nairobi, E. Africa. Consolation Prizes: L. Alley, Durban, S. Africa; T. Coulter, Palmerston North, N.Z.

APRIL 1949 AIRCRAFT DRAWING CONTEST

1st Prize: R. J. Garner, Bukuru, B.W.A. 2nd Prize: T. B. M. Chicken, Cape Town, S. Africa 3rd Prize: I. Stephenson, Auckland, N.Z. Consolation Prizes: A. H. Louw, Worcester, S. Africa; I. C. Dyer, Bombay, India; D. Johnston, Dublin, Eire; M. Kennedy, St. George, Bermuda; E. Flores Birkirkara, Malta, G.C.

MAY 1949 PHOTOGRAPHIC CONTEST

1st Prize, Section A: K. J. Milne, Hastings, N.Z.; Section B: J. Russell, Sarnia, S. Africa. 2nd Prize, Section A: C. B. L. Osborn, Demerara, Br. Guiana. Section B: V. Ayi Jibidar, Achimota, W. Africa. 3rd Prize, Section A: L. F. Jones, Durban, S. Africa; Section B: W. Clare, Bray, Eire. Consolation Prizes: H. Arnold, Dublin, Eire; D. Fennelly, Galway, Eire.

SOLUTIONS

JANUARY 1949 COVER VOTING CONTEST

1st June; 2nd August; 3rd November; 4th October; 5th July; 6th April; 7th December; 8th May; 9th January; 10th September; 11th February; 12th March.

FEBRUARY 1949 STATIONS CONTEST

1. Abbey Wood, Southern Region. 2. Badminton, Western Region. 3. Battle, Southern Region. 4. Forest Gate, Eastern Region. 5. Hook, Southern Region. 6. Hornby, London Midland Region. 7. Marble Arch, London Transport. 8. Maud, Scottish Region. 9. Palace Gates, Eastern Region. 10. Peak Forest, London Midland Region. 11. Banks, London Midland Region. 12. Tram Inn, Western Region.

MARCH 1949 RAILWAY QUIZ

1. London (Marylebone), Aylesbury, Rugby, Leicester, Nottingham, Sheffield and Bradford; E.R. and L.M.R. 2. A push-and-pull train consisting of a locomotive with one or more coaches, so arranged that it can be driven from either end. 3. The G.E.R. 4. A coach wheel in which the body between the boss and the rim is formed of hardwood blocks; South Eastern Railway. 5. 1,484 feet; Druimuachdar Summit, on the Perth-Inverness main line. 6. The assisting engine of a double-headed train; an engine which does station shunting as required and which also assists or even replaces the locomotive of a main line train in the event of engine failure or other emergency; an engine sent on before a train to clear its way. 7. Trains with seats and covered accommodation for third-class passengers, at a prescribed fare, and stopping at every station as compelled by the Railway Regulation Act of 1844. 8. "*The Great Bear*" (G.W.R. 4–6–2 No. 111). 9. Liverpool and Cardiff; at Runcorn and Newport. 10. Cockermouth, Keswick and Penrith Railway.

APRIL 1949 CAR FACES CONTEST

1. Bentley Mark VI Saloon. 2. Vauxhall Velox. 3. Austin, A.40 Devon. 4. Jowett Javelin. 5. Humber Hawk. 6. Hillman Minx. 7. Morris Oxford. 8. Armstrong Siddeley, Lancaster Saloon. 9. Standard Vanguard. 10. Jaguar Mark V Saloon.

MAY 1949 LOCOMOTIVE PARTS CONTEST

1. Cover of outside steam pipe that conveys live steam from superheater to steam chest. 2. Smoke-box door handle; keeps smoke-box door closed and air-tight. 3. Electric headlight; by night these denote class of train. 4. Snifting valve or anti-vacuum valve; allows air to circulate through superheater and cylinders when engine is coasting. 5. Vacuum ejector exhaust pipe; takes exhaust steam and air from ejector into smoke-box. 6. Safety valve; these allow excess steam to escape from boiler. 7. Cab side door; closes entrance between engine and tender. 8. Cylinder drain pipes; take away condensed steam from the cylinders. 9. Cap over cylinder cover and studs. 10. Connecting rod; transmits motion of piston to driving wheels. 11. Radius rod, transmits motion of expansion link to valve spindle. 12. Filler through which the sandbox is fed with sand.

JUNE 1949 RAILWAY STORY CONTEST

Euston; 45700 "*Britannia*"; Rugby; Nuneaton; Stafford; Preston; 46762; Wirral Railway; 45504 "*Royal Signals*"; Blackpool; 50455; "Dreadnoughts"; 46110 "*Grenadier Guardsman*"; 45562 "*Alberta*."

June 1949 Crossword Puzzle Solution.

Fireside Fun

"Yes, Old Brown looks prosperous, but I'll bet he has only half a shirt to his back."
"Oh surely not! What makes you say that?"
"Well, isn't the other half in front?"

* * * *

"What's the new addition outside?"
"It's a sundial."
"What's it for?"
"For telling the time."
"My! What'll they think of next!"

* * * *

Irate motorist: "I say, how long will this confounded train be?"
Crossing keeper: "Engine and six coaches, sir."

* * * *

"Coal is funny stuff, isn't it?"
"Why?"
"When you buy it it goes to the cellar."

* * * *

"Here, hide in this cupboard quick. If you are discovered you are lost."
"Silly! If I am discovered I am found, aren't I?"

* * * *

"My grandfather is 85 to-day. He's a wonderful man."
"He ought to be. He's been practising a long time."

* * * *

"I don't think much of him Dad. He's missed her again."

* * * *

"You've failed in your exam. again, Cuthbert, and I am sure you know enough to get through. Why don't you pass?"
"What's the use? When I pass it, you'll all make me work for another one."

BRAIN TEASERS

COLOURS FOR PETS

A man bought nine chickens, one for each member of his family. To distinguish them it was decided to fix coloured rings to their legs, with no more than one ring to each leg. What is the least number of colours needed? D.J.C. and D.M.C.

* * * *

A QUICK ONE

The following are clues to 10 words of three letters each, which differ only in their first letters. What are the words?

1, Prohibition; 2, Tin; 3, Name; 4, Cooler; 5, Human being; 6, Utensil; 7, Hastened; 8, Colour; 9, Vehicle; 10, Pale. S.W.C.

* * * *

D N G R

A printed notice with the above heading was seen outside a ruined house. The notice itself was as follows: NYBDYWSHNGTNTRDSSTHSWNRSK.
The printer apparently had no vowels or stops. What was the notice intended to say? B.I.N.

* * * *

"Tell your boss Hiram Johnson is here, and wants to see him at once."
"H'm. That's awkward."
"What do you mean, awkward?"
"He told me to throw you out when you came."

* * * *

WHICH WOULD YOU CHOOSE?

An office boy was being engaged at a salary of £50 a year. His employer said he would give him a rise of £5 every half year, or one of £20 every year, whichever he chose. The boy immediately elected to have a rise of £20 a year. Was he right?

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

The six words forming the square of our first puzzle last month are CIRCLE, INURES, RUDEST, CREASE, LESSEE and ESTEEM. If these are written in square form it will be found that the columns give the same words as the rows. There may be other solutions, and readers who found them should send them in.

Of the two runners in our second puzzle Dick was the winner.

A round peg can be fitted into a square hole, each side measuring $\frac{1}{2}$ in., if the diameter of the peg is $\frac{1}{2}$ in. and it is $\frac{1}{8}$ in. in length. The trick is to insert it sideways.

The number of passengers who were in the bus to begin with in our fourth puzzle was 32.

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THERE are no entry fees. The WINTER competition closes on December 31st. Pick out your best pictures, now, and try for one of these big cash prizes. Any subjects may be submitted. Landscapes, Street Scenes, Seascapes, Beach Pictures, Portraits of children and animals, Figure studies, Architecture and Travel subjects.

Entries must be sent to the COMPETITION DEPT., JOHNSONS OF HENDON LTD., HENDON WAY, LONDON N.W.4, and, for the Winter Competition, must reach there before DECEMBER 31st. Entries arriving after this date will be entered for the 1950 summer competition. A title panel from the wrapping of any Johnson chemical must be pasted on the back of each picture. You may send in as many entries as you like. No print should be smaller than 2¼ x 3¼ in. Prints should be mounted as they are then less likely to get damaged. Any camera may be used and the prints may be of any process, but you should have done the work yourself with Johnson Chemicals. Prints which win prizes are to become the property of JOHNSONS OF HENDON LTD. The negative remains the property of the competitor. NEGATIVES SHOULD NOT BE SENT WITH ENTRIES. Write full name and address in block capitals on the back of each mount. Details of film and developer used should be given. If the photographs are to be returned, you must send sufficient postage stamps (loosely attached) to cover the return postage. No correspondence should be enclosed with entries as the packages will not be opened until after 31st Dec. The decision of Johnsons of Hendon is final.

3 prizes of	..	*£10*
3 prizes of	..	*£5*
15 prizes of	..	*£2*
15 prizes of	..	*£1*

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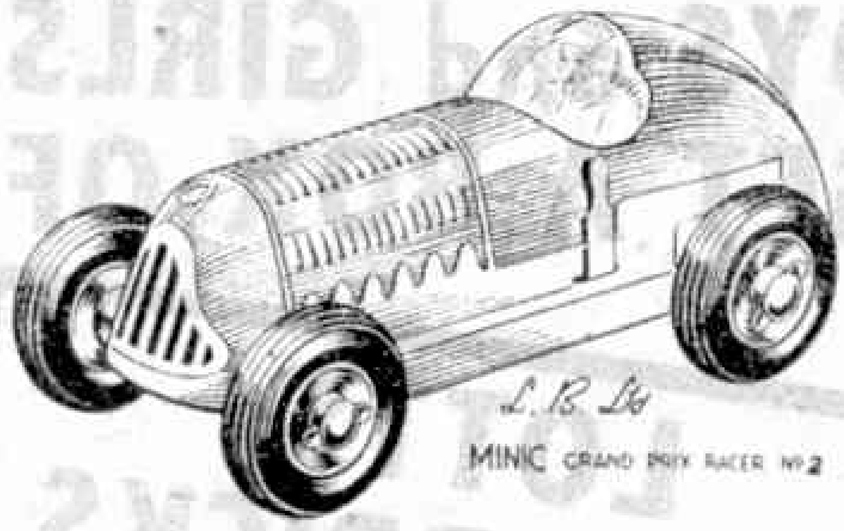

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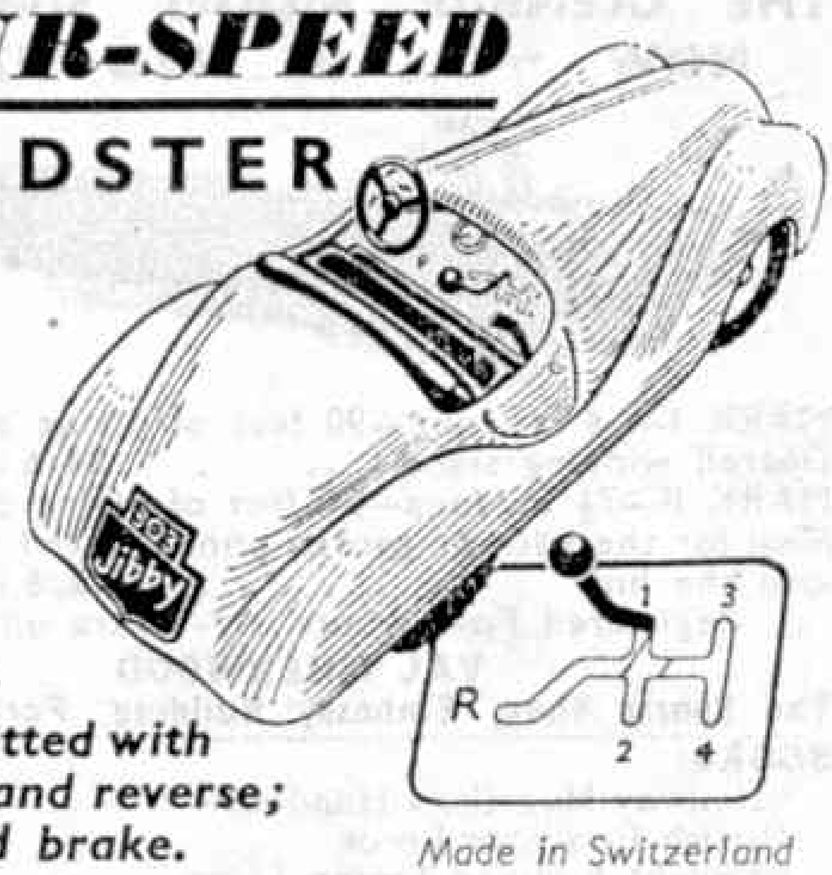

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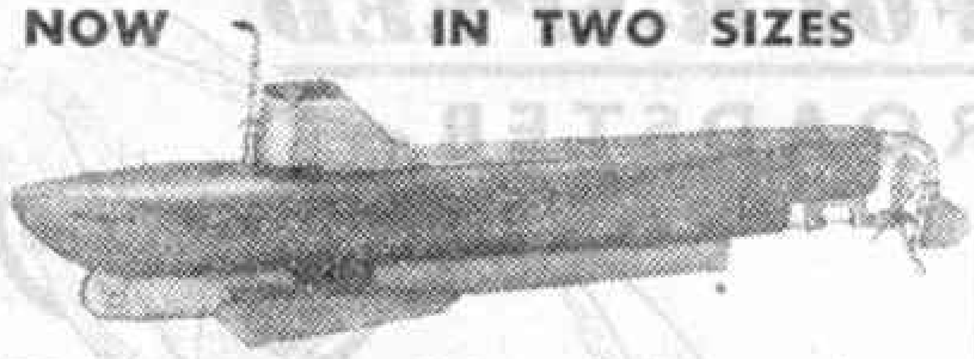

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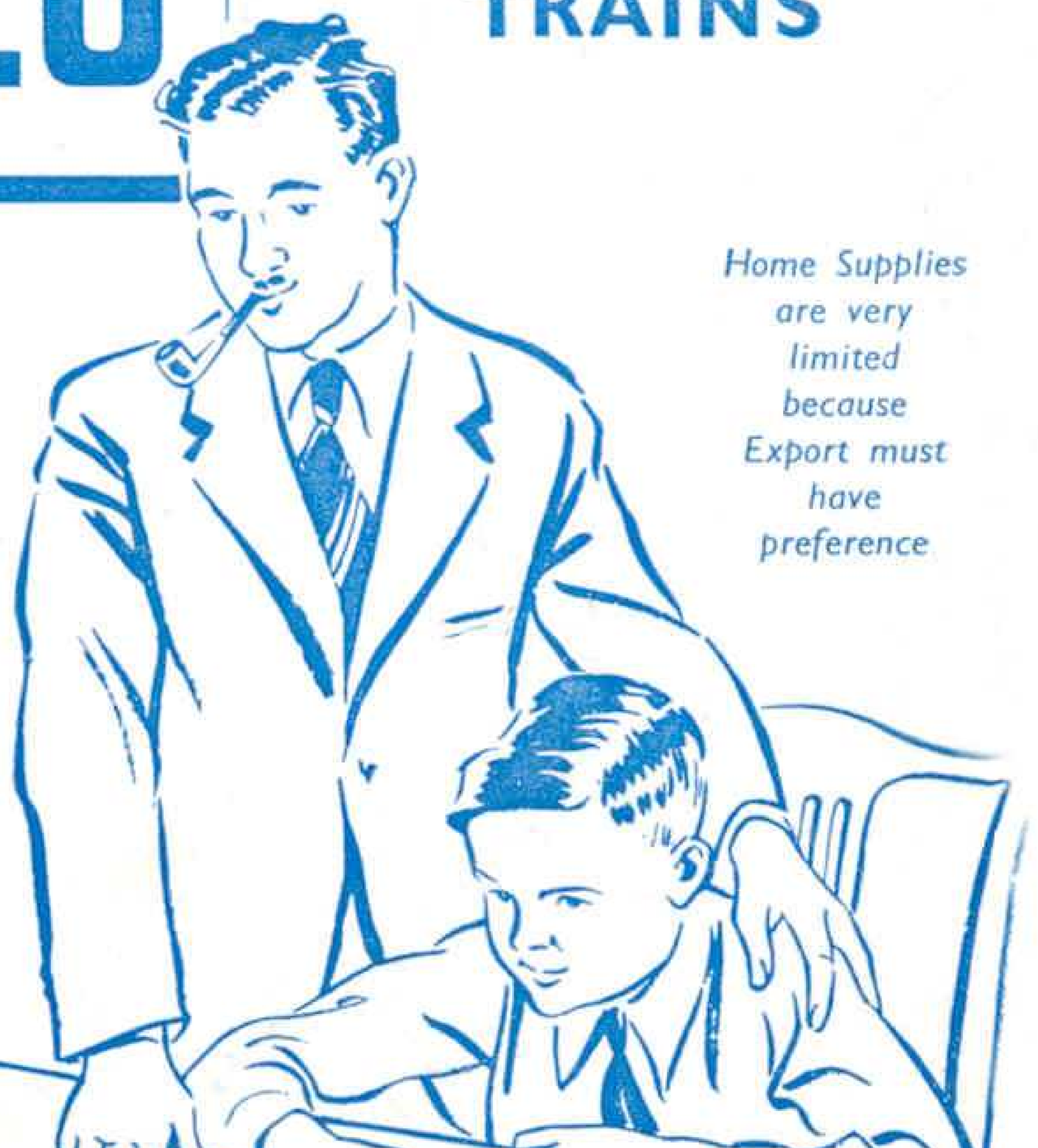

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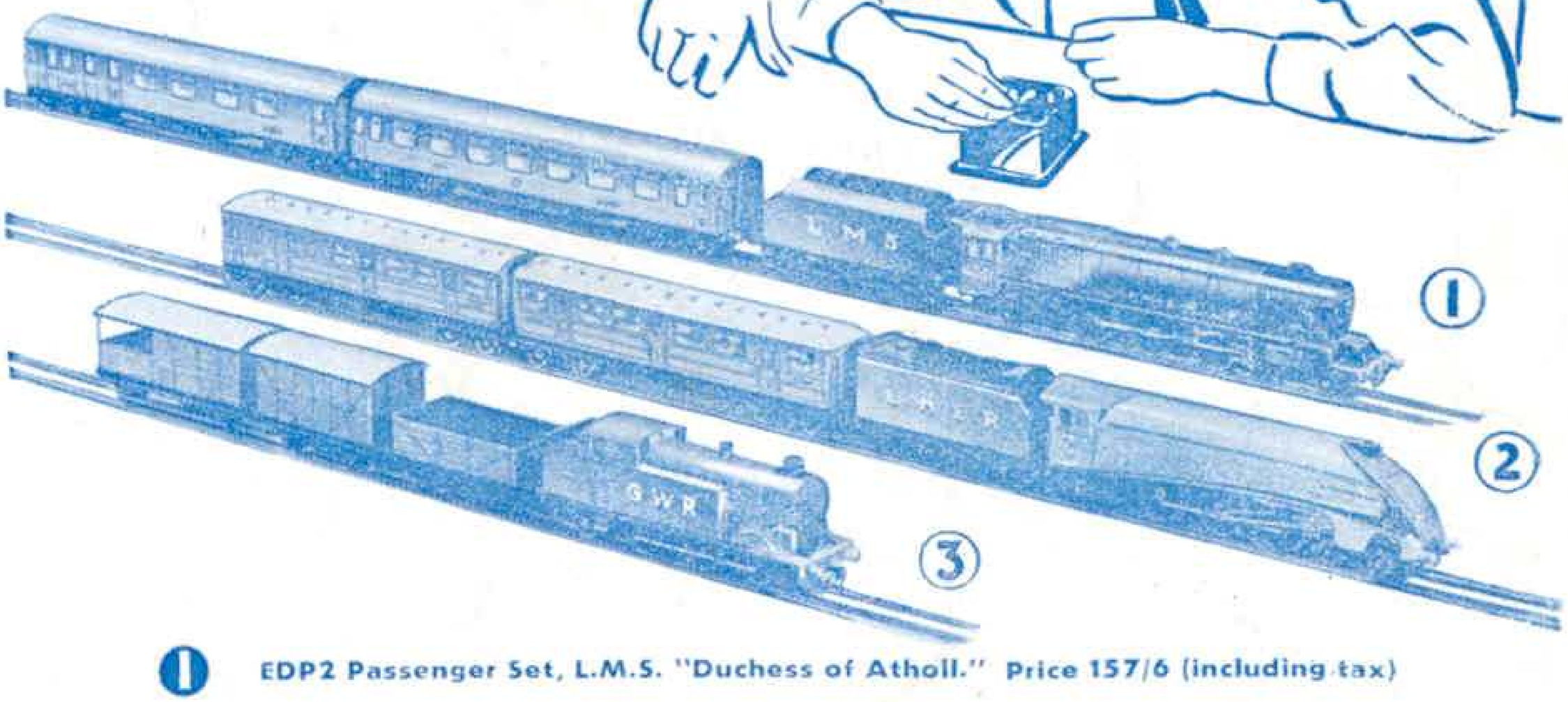

1 **EDP2 Passenger Set, L.M.S. "Duchess of Atholl." Price 157/6 (including tax)**

2 **EDP1 Passenger Set, L.N.E.R. "Sir Nigel Gresley." Price 145/- (including tax)**

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